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ELECTRICAL WORLD

JUNE 11, 1932
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Western Editor
520 N. Michigan Ave.
Chicago
H. S. KNOWLTON
New England Editor
1427 Statler Bldg.
Boston
PAUL WOOTON
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JAMES H. RUDD
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N.E.L.A.
REPORT ISSUE

JUNE 11, 1932

Contents, Copyrighted, 1932, by McGraw-Hill Publishing Company, Inc.

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Published weekly. $5 per year. 25 cents per copy. Central and South American countries, $7. Foreign, $9 U. S. currency, or 45 shillings per year. Canada subscription price (including Canadian duty), $7.50. Entered as second-class matter, January 20, 1907, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A. Cable Address: "MCGRAWHILL, N. Y." Member A.B.P. Member A.B.C. Number of Copies Printed This Issue, 15,935.

McGRAW-HILL PUBLISHING COMPANY, INC., 330 WEST 42d STREET, NEW YORK, N. Y.

Branch Offices: 520 North Michigan Ave., Chicago; 883 Mission St., San Francisco; Aldwych House, Aldwych, London, W. C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Greenville, S. C.; Los Angeles. James H. McGraw, Chairman of the Board; Malcolm Muir, President; James H. McGraw, Jr., Vice-President and Treasurer; Mason Britton, Vice-President; Edgar Kobak, Vice-President; H. C. Parmelee, Vice-President and Editorial Director; Harold W. McGraw, Vice-President; C. H. Thompson, Secretary.

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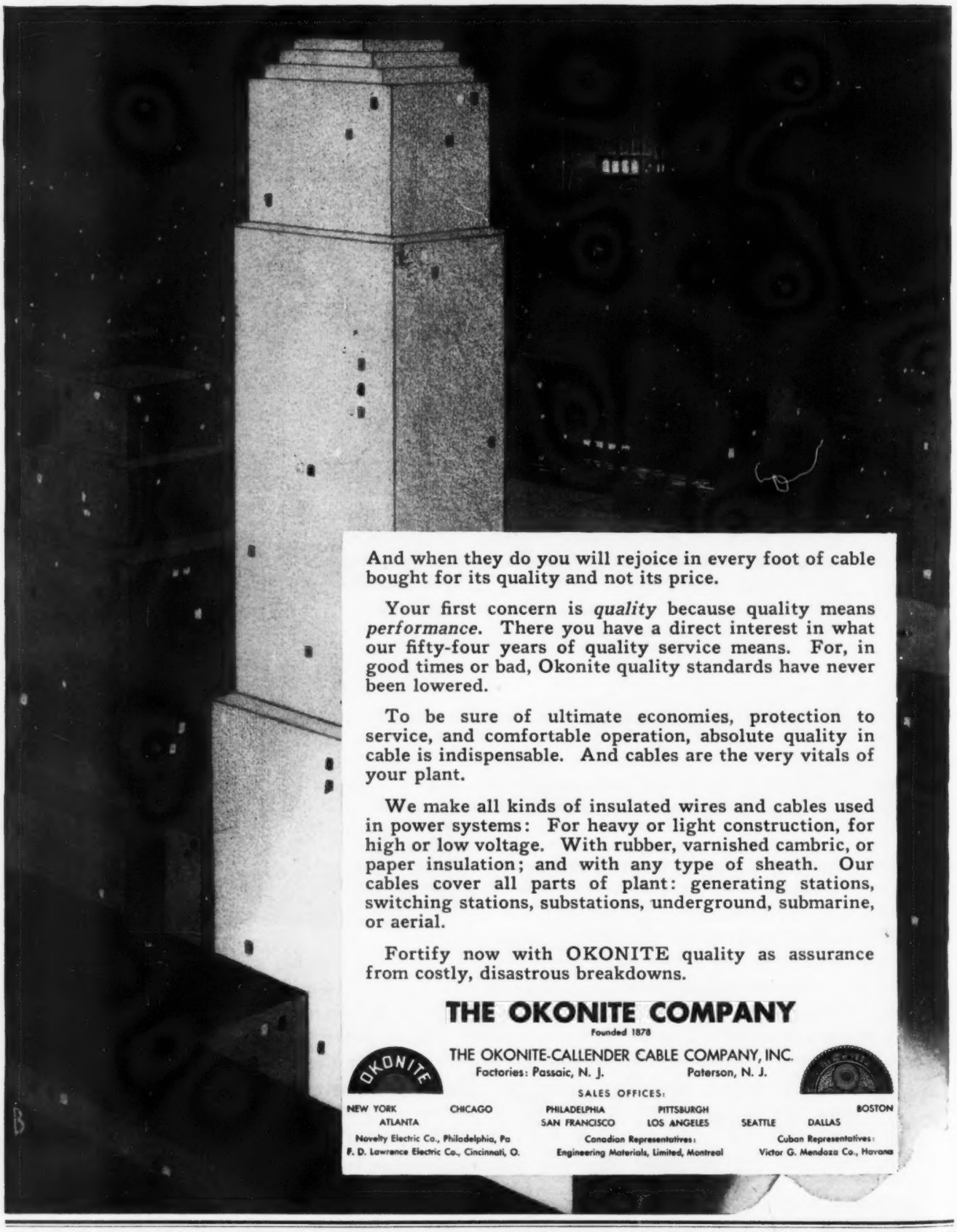

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ELECTRICAL WORLD

Established 1883. McGraw-Hill Publishing Company, Inc.

for the Week Ending

June 11, 1932

Samuel Insull Resigns His Chairmanships

Veteran executive will be succeeded in Chicago operating group by James Simpson, chairman of Marshall Field & Company.

"DUE regard for my health necessitates my retirement from the business responsibilities I have been carrying. Therefore I have today resigned the chairmanships and directorships of the Commonwealth Edison Company, the People's Gas Light & Coke Company and the Public Service Company of Northern Illinois. These resignations were accepted at board meetings held this afternoon and became effective immediately. I have also resigned from the receivership of the Middle West Utilities Company, subject to acceptance by the federal court."

This statement was made in Chicago by Samuel Insull on June 6. He declined to elaborate or comment on it. At the same time the following joint statement was issued by the boards of the three companies:

"At meetings of the respective boards of directors of the Commonwealth Edison Company, the People's Gas Light & Coke Company and the Public Service Company of Northern Illinois, held today, the resignations of Samuel Insull as chairman and as a member of the several boards were accepted with regret. Mr. Insull's resignations bring to a close his long association with these companies, during which he has brought them into an outstanding position in the utility field.

"At the same meetings James Simpson was unanimously elected chairman of these several companies. Controlled by the desire to find an outstanding Chicago man of recognized ability fully qualified to fill this position, the directors regard themselves as fortunate in securing Mr. Simpson's consent to act, especially since he has for many years been a director of the Commonwealth Edison Company. Inasmuch as Mr. Simpson desires to give his undivided attention to his new duties, he has resigned as chairman of the board of directors of Marshall Field & Company.

"Samuel Insull, Jr., will continue as vice-chairman of the several companies."

Apart from Mr. Insull's retirement and Mr. Simpson's succession no immediate changes in the operating personnel of the three companies are expected. Samuel Insull, Jr., vice-chairman of the companies; E. J. Doyle, president of Commonwealth Edison; George F. Mitchell, president of People's Gas, and Britton I. Budd, president of the Public Service Company of Northern Illinois, will continue. Each of these three utilities has granted Mr. Insull an annuity of $6,000.

There will probably be a realignment of the banking group that heretofore has handled the financing for the Insull companies. New financing authorized by the Illinois Commerce Commission two weeks ago and totaling $70,000,000 will be offered through New York and Chicago banks, with one or two investment houses that hitherto have headed the group now taking subordinate positions. In preparation for this financing the banks have had special audits made of the three companies.

It is said these audits will show the companies to be in good financial condition, and bankers hold no doubt of the success of their current refinancing operations. The Commonwealth Edison Company will offer publicly $18,000,000 of first mortgage 5½ per cent 30-year bonds, the People's Gas Light & Coke Company will offer $20,000,000 of first mortgage 5½ per cent 25-year bonds, and the Public Service Company of Northern Illinois will offer $32,000,000 of first lien and refunding mortgage 6½ per cent 20-year bonds.

Simpson Steps Into Breach

"While in India I recently received a message from my fellow directors in the Commonwealth Edison Company suggesting that they would like to have me return," Mr. Simpson said. "I came at once. Upon my return I learned of the contemplated resignations of Mr. Insull, which were to become effective almost immediately. This necessitated prompt action in the selection of his successor.

"While each of the companies has able management, nevertheless Mr. Insull himself, as chairman of all three boards, was the connecting link between them.

This Week

N.E.L.A. holds 55th convention

Sell our services and policies to the public — President Owens. p. 1017

Refrigeration, cookery, home lighting have progressed. p. 1039

Taxation is today's public relation's problem. p. 1037

New program of activities announced for the association. p. 1027

Depression brings no halt in engineering advances of the industry. p. 1033

Rate simplification viewed as a vital industry need. p. 1019

The directors of the several companies have asked me to accept the offices. This I have agreed to do. It was not easy for me to give this consent because it means the severing of lifelong relationships with my associates in Marshall Field & Company."

Mr. Simpson's career follows closely the typical American success story in his rise from a six-dollar-a-week clerkship in 1891 to chairman of one of the world's largest mercantile enterprises in 1930. He was born in Glasgow in 1874. A child immigrant in 1880, his parents brought him to Chicago, where he attended public schools and a business college. After he had been a year in the cashier's office of Marshall Field & Company, Mr. Field took him into his own office, and he soon became confidential secretary to the rising merchant prince. When Mr. Field died, in 1906, Mr. Simpson became second vice-president of the company, and in 1917 he was made vice-president. He was elected president in 1923 and was elevated to the chairmanship of the board in February, 1930. Since 1917 Mr. Simpson has been a director of the Federal Reserve Bank of Chicago as well as deputy chairman.

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Audit Ordered for Insull Utility Investments, Inc.

United States Judge Walter C. Lindley announced in Chicago on Tuesday that a complete audit of the affairs of the Insull Utility Investments, Inc., was being made under the supervision of the receivers and the federal court. Pending completion of the audit, the court postponed until June 22 the decision on the petition of two attorneys for noteholders seeking to intervene in the proceedings.

The judge had accepted earlier the resignation of Samuel Insull as a co-receiver of the Middle West Utilities Company and delegated the power previously vested in him to the other receivers, Edward N. Hurley and Charles A. McCulloch. Report says that Charles G. Dawes may take Insull's place as receiver.

Stocks of the Insull operating companies slumped on the Chicago Exchange on Tuesday with other securities. Commonwealth Edison, which had had a sharp run-up in anticipation of the change in management, reacted more than 5 points to close at a fraction under 56. No-par stock of Public Service of Northern Illinois receded 3½ points on sales of 1,000 shares. People's Gas sold down to 53½ in New York.

Headquarters of various intermediary holding companies of the Middle West Utilities Company are, it is said, being transferred to either Chicago or New York as an economical move.

Tax on Electrical Energy Must Be Paid by the Consumer

Revenue bill passes with 3 per cent impost on electricity in this form—Radicals in Senate protest—President signs measure immediately.

SPEED characterized the performance of the conference committee of senators and representatives to which, as reported last week, the Senate's budget-balancing tax bill was submitted, and a new bill, agreed upon by the conferees, was submitted to both houses on Friday, June 3, passed on Monday of this week and immediately signed by the President.

The chief fight over the new bill was waged on the floor of the Senate over the clause imposing a 3 per cent tax on sales of electrical energy for domestic or commercial consumption. This clause, which finally went through unaltered, is printed in the accompanying panel.

Tax on Electrical Energy

(a) There is hereby imposed a tax equivalent to 3 per centum of the amount paid on or after the fifteenth day after the date of the enactment of this act for electrical energy for domestic or commercial consumption furnished after such date and before July 1, 1934, to be paid by the person paying for such electrical energy and to be collected by the vendor.

(b) Each vendor receiving any payments specified in subsection (a) shall collect the amount of the tax imposed by such subsection from the person making such payments and shall on or before the last day of each month make a return, under oath, for the preceding month and pay the taxes so collected to the collector of the district in which his principal place of business is located, or if he has no principal place of business in the United States, to the Collector at Baltimore, Md.

Such returns shall contain such information and be made in such manner as the Commissioner with the approval of the Secretary may by regulation prescribe. The Commissioner may extend the time for making returns and paying the taxes collected, under such rules and regulations as he shall prescribe with the approval of the Secretary, but no such extension shall be for more than 90 days.

(c) No tax shall be imposed under this section upon any payment received for electrical energy furnished to the United States or to any state or territory or political subdivision thereof or the District of Columbia. The right to exemption under this subsection shall be evidenced in such manner as the Commissioner with the approval of the Secretary may by regulation prescribe.

Senator Howell of Nebraska, who was the author of the clause that was incorporated in the Senate bill sent to conference, was joined by other Progressives in his effort to have the bill sent back to conference on the ground that the new clause constituted legislation; but Vice-President Curtis overruled the point of order. The new clause was then bitterly assailed by Senator Norris, who declared: "The Senate voted twice on this very proposal. But in the secret conference room, where the sunlight of publicity could not penetrate, our conferees surrendered. Yes, they surrendered, and the power trust goes marching on, levying its tribute on God's poor." The final vote was 46 to 35 for the conference report, against which 11 Republicans, 23 Democrats and Senator Shipstead (Farmer-Laborite) voted.

In company with many newspapers and utility spokesmen, the ELECTRICAL WORLD last week erroneously said that the Howell amendment passed by the Senate contained the words "payable from net income but not otherwise." These words had been specially inserted by Senator Howell, but at the last minute were stricken out on motion of Senator Couzens. This action took place very late at night and escaped notice in some press reports sent from Washington.

It will be noticed that by the clause as now finally made law there is no question that the tax can be at once passed on to the consumer. Municipal plants are not exempt. The act does not tax gas, though taxes are imposed on telegraph, telephone, radio and cable facilities. The copper and other import duties remain.

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Kilowatt-Hour Tax Bobs up in Louisiana House

In Louisiana, the last state to hold a regular legislative session in 1932, utility bills are making their appearance. By one of these, introduced in the House by Representative Lee, a tax of 2½ mills per kilowatt-hour on electric power manufactured or consumed in the state would be levied. Other House bills would tax consumption of natural-gas, which would require a constitutional amendment.

In the upper House Senator Morgan

has a bill to authorize the Public Service Commission and local regulatory bodies to inquire into agreements and contracts made by public utilities with subsidiaries to insure against unfair rate making.

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Electro-Industrial Topics for Program of A.I.S.E.E.

Electrical developments in the iron and steel industry, progress in the science of electric welding, safety regulations governing work on high-tension lines, standard control apparatus, electron-tube applications in steel mills, devices actuated by light, profitable uses for electronic devices responsive to light in the iron and steel industry, design and performance of a fully compensated direct-current machine and what it means to the steel industry, determination of motor capacity for main-roll drives, water-cooled furnaces for steam boilers, development of air-cooled and insulated refractory walls, fuel economy under curtailed operating conditions, higher steam pressures in the blast furnaces of steel-mill power plants—these are among the practical subjects set for discussion at the twenty-eighth convention of the Association of Iron and Steel Electrical Engineers. The convention will be held in Pittsburgh on June 20 to 23 in connection with the annual iron and steel exposition of the association.

Those who will give papers and lead discussions include General Electric and Westinghouse engineers, electrical superintendents in large steel plants, consulting engineers and professors of technology from university faculties. The association is just 25 years old. It now has five city sections—Cleveland, Chicago, Birmingham, Pittsburgh and Philadelphia—and engineering branches covering mechanical engineering, electrical engineering, lubrication, combustion and safety.

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Fifty Years Must Be Limit for Charters, Pinchot Says

Governor Gifford Pinchot of Pennsylvania announced on June 3 that in future he will refuse to sign any public utility charter which has a term of more than fifty years. "Utilities should be given a sufficient life to protect fully the interests of investors," the Governor said, "but no perpetual or long-term right should be granted so as to saddle posterity with an inescapable burden. Charter rights for longer than a maximum of fifty years—virtually two generations—are, in my opinion, dangerous to the public welfare. I hold further that the duty of present-day officials to protect future generations is urgent."

The Governor cited as a case in point the recent renewal for 25 years of a charter in the Borough of Kane which the West Penn Power Company desired to make perpetual and attributed the rate reduction put in force for the whole Keystone division of the West Penn company to this restriction of the charter.

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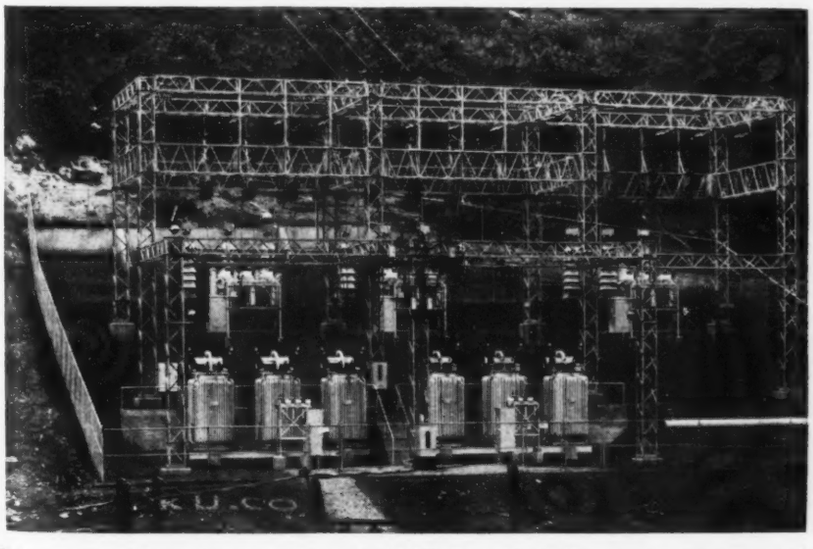
ABSENCE OF LEVEL SITE FORCES SUBSTATION ON A SLOPE



This unusual three-level or terraced hillside substation was constructed by the Kentucky Utilities Company recently at Lynch, Ky., to serve the United States Coal & Coke Company, which was forced to central-station service by shortage of water. The station is rated at 5,500 kva. and replaced a 3,000-kw. steam plant. It now operates at 33,000/6,600 volts. It is at the intersecting point of three 33,000-volt circuits.

Bond Support Rallies Security Markets

FORMATION of an organization to purchase sound investment securities "for the long pull" is announced by Thomas W. Lamont of J. P. Morgan & Company with the backing of New York's foremost banking institutions. Funds for investment will be made available through the sale of its debenture bonds. Initial subscriptions of $100,000,000 are reported. Security markets strengthened on this news.

Bright hopes for a balanced budget are tempered with the stern realization that, despite the promptness with which Congress and the President have made the conference tax bill law the probabilities are quite mixed in regard to realization of the estimated revenues. Dodging the sales tax may yet have its practical disadvantages.

No important changes are to be noted in business barometers as the nation drifts dolorously into the dispiriting though spectacular times of party conventions.

Commissioner Woodruff Commends West Penn Rates

A rate cut announced by the West Penn Power Company in the Coudersport district, bringing charges in six counties down close to the level of those previously adopted by that company for the Washington, Greensburg and Kittanning districts, has elicited outspoken approval from George W. Woodruff, the member of the Pennsylvania Public Service Commission who led the recent fight in that body to enforce lower rates. The new cut will be effective on June 15. Mr. Woodruff is quoted as having said that the West Penn Power's Kittanning rates compared more favorably with those of his suggested domestic tariff than did those of any other Pennsylvania utility.

As previously reported in the ELECTRICAL WORLD, Commissioner Woodruff last January suggested a maximum state-wide scale for domestic rates. His resolution failed of passage when three members of the commission did not vote on it. Later the commission adopted another resolution which provided for investigation of rates but did not include a maximum schedule. The preliminary work of the investigation is now being done by the commission's bureaus.

Mr. Woodruff in his resolution suggested the following maximum rates: 40 kw.-hr., $2; 75 kw.-hr., $3.23; 100 kw.-hr., $4.11; 200 kw.-hr., $6.61. With these charges he has compared the rates in Kittanning for six rooms, which are respectively $2.14, $3.19, $3.94 and $6.32.

Coming Meetings

Pacific Coast Electrical Association—Hotel Huntington, Pasadena, Calif. June 14-17. K. I. Dazey, 447 Sutter St., San Francisco.

Canadian Electrical Association—Manor Richelieu, Murray Bay, Que., June 15-17. B. C. Fairchild, 409 Power Bldg., Montreal.

Public Utilities Advertising Association—Waldorf-Astoria, New York, June 21 and 22. J. R. Pershall, Public Service Co. of Northern Illinois, Chicago.

Association of Iron and Steel Electrical Engineers—William Penn Hotel, Pittsburgh, June 20-23. J. F. Kelly, Empire Bldg., Pittsburgh.

American Society of Agricultural Engineers—Ohio State University, Columbus, Ohio, June 20-24. Raymond Olney, St. Joseph, Mich.

American Institute of Electrical Engineers—Summer convention, Cleveland, June 20-24; Pacific Coast convention, Vancouver, B. C., Aug. 29-Sept. 2. H. H. Henline, 33 West 39th St., New York.

American Society for Testing Materials—Chalfonte-Haddon, Atlantic City, June 20-24. C. L. Warwick, 1315 Spruce St., Philadelphia.

American Society of Mechanical Engineers—Bigwin Inn, Lake of Bays, Ontario, June 27-July 1. C. W. Rice, 29 W. 39th St., New York.

New England Division, N.E.L.A.—Mount Washington Hotel, Bretton Woods, N. H., July 11-13. Miss O. A. Bursiel, 20 Providence St., Boston.

Camp Co-operation XII—By boat to Bermuda, Aug. 3-8. Society for Electrical Development, 420 Lexington Ave., New York.

Pennsylvania Electric Association—Bedford Springs, Pa., Sept. 7-9. H. A. Buch, Telegraph Bldg., Harrisburg.

Rocky Mountain Division, N.E.L.A.—Stanley Hotel, Estes Park, Colo., Sept. 12-14. G. E. Lewis, 367 Gas & Electric Bldg., Denver.

Empire State Gas & Electric Association—Saranac Lake, N. Y., Sept. 22 and 23. C. H. B. Chapin, Grand Central Terminal, New York.

Illuminating Engineering Society—New Ocean House, Swampscott, Mass., Sept. 26-30. E. H. Hobbie, 29 W. 39th St., New York.

National Electrical Wholesalers' Association—Hotel Statler, Buffalo, N. Y., Sept. 26-30. E. Donald Tolles, 165 Broadway, New York.

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Sault Utility Control in Los Angeles and Baltimore

Management control of the American States Public Service Company, the holding company owning the entire capital stock of the Edison Sault Electric Company, Sault Ste. Marie, Mich., has changed hands, J. B. Whitworth of of Los Angeles replacing W. F. Vogelbeck of Chicago as president and Thomas Chandler of Sault Ste. Marie replacing Fred D. Ellis of Chicago as vice-president and as manager of all the company's properties in Michigan and Indiana. L. V. Cochrane of Baltimore replaced E. J. Haugh of Chicago as secretary-treasurer.

General offices of the American States Public Service Company are to be moved from Chicago, and henceforth the administrative offices will be in Los Angeles and the financial offices in Baltimore. The Sault Ste. Marie offices will take care of the company affairs as they affect Michigan and Indiana.

The Michigan properties controlled by the American States Public Service Company through Mr. Chandler are the Edison Sault Electric Company, Chippewa Edison Company, Mackinac Island Power Company, St. Ignace Public Service Company and Manistique Light & Power Company.

The Indiana properties are the Greendale Water & Electric Company at Greendale and Dearborn-Ripley Light & Power Company at Sunman. The American States Public Service supplies water service to communities around Los Angeles and also has water and electric plants in Oregon, Idaho and Montana.

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Commission Backs Evidence on Existing Economic Facts

"We refuse to believe that public utility regulation is so inflexible and unadaptable that it cannot adjust itself to the realities of these trying times." This statement reflects the attitude of the Public Service Commission of Wisconsin in a ruling made June 1 when counsel for the Wisconsin Telephone Company moved to strike out testimony relating to economic conditions from a commission-initiated investigation of the rates and practices of this company. (ELECTRICAL WORLD, May 28, page 915.) Commissioner Lilienthal, who gave the ruling, said further:

> We would be both stupid and blind if we failed to inform ourselves of the extent to which the depression has changed the whole economic fabric of the community affected by this proceeding. . . . The spectacular fall in the general commodity price level and in the prices paid generally by public utilities for material, supplies and even labor (in many instances), the greatly increased purchasing power of the dollar paid to the telephone company by its subscribers, the low returns received in almost every other business at the present time, the relatively low rate of business activity throughout the country and not alone in Wisconsin—these and other facts brought out in the testimony submitted at our request are in our judgment distinctly relevant to the issues in this telephone rate investigation.

▼

Finance Corporation Helps Pennsylvania to Electrify

By aid of funds to be advanced monthly by the Reconstruction Finance Corporation, to total $27,500,000, the Pennsylvania Railroad is going forward with its electrification and allied improvement program after a delay of several months due to shortage of funds resulting from falling revenues and inability to finance to advantage in the usual banking channels. At present the lines are electrified between Trenton and Wilmington, and electric service has been operated over this stretch more than a year. It is planned to complete electrification between New York and Wilmington as a first step in the comprehensive improvement program, and after these lines are in operation to extend the electric service to Washington.

▼

Claude Reports Progress in Deep-Sea Power Plan

According to a Paris dispatch to the New York *Times*, Prof. Georges Claude, who has conducted experiments at Matanzas, Cuba, in extracting power from the sea by the utilization of the difference in temperature between the lower and upper currents to convert the surface water into steam, believes he has found a way to cure one of the chief defects of his system. He is said to have demonstrated to the French Academy of Sciences a device to remove gases that interfered with the efficiency of his apparatus. This device, invented by the late Auguste Rateau, would itself consume only 8 per cent of the total energy produced.

Short accounts of Professor Claude's experiments at Matanzas were contained in various issues of the ELECTRICAL WORLD for 1930 (Vols. 95 and 96).

▼

Ontario Hydro May Want Less Power than It Anticipated

A recent development between the Dominion of Canada and the Province of Ontario, while involving only a small amount of horsepower, illustrates the extent to which the Dominion has canvassed every condition that might render it less difficult for Ontario to become party to a pact by which the province will undertake to absorb or market the 900,000 hp. which it is hoped will accrue ultimately from the St. Lawrence project. The policy of the Dominion government was to preserve all potential power from the Trent Canal for the Ontario Hydro-Electric Power Commission. This understanding has been terminated, and hereafter whatever power is available will be first offered to private interests.

Significance is attached to this change of policy as indicating that the Ontario officials are not now quite so sanguine as they were about their ability to absorb or market the large amount of power that may be developed in the international section of the St. Lawrence and are desirous of being relieved of any arrangement by which they would be obliged to take power from sources other than those to which they are committed by contract.

April Energy Output and Revenue Decrease

Further moderate declines in revenue, compared with figures for the corresponding month a year ago, are disclosed in the returns from electric light and power companies for April thus far received by the ELECTRICAL WORLD. The average decrease is 6 per cent. On the basis of $176,210,000 in April, 1931, this indicates probable receipts of about $166,000,000. Reports yet to come in are not expected to cause any important change in this figure.

Because of decreased operating expenses only a portion of the shrinkage in gross revenue was carried through into net. Coal consumption during the month was cut 600,000 tons, compared with last year, largely because of more abundant water power.

Regionally, the largest declines in revenue, ranging from 8 to 10 per cent, occurred in the central industrial area, the Southwest and the Far West. In other sections the average was around 4 per cent; in New England a trifle less.

Public utility plants had an output during April of 6,780,565,000 kw.-hr., a decrease of 7 per cent from the 7,302,823,000 kw.-hr. of March when the totals are compared and of 4 per cent when expressed in terms of average daily production, it is reported by the United States Geological Survey. About 95 per cent of this output came from central stations for light and power.

Production from water power was equal to that in April, 1931, but total production was lower by 11 per cent, the entire decrease being in the output from fuel. This is the largest decrease thus far reported for any month. The corresponding figures for the first three months of the year were, successively, 8, 6 (adjusted for difference in the number of days) and 7 per cent.

The production from water power was 46 per cent of the total. This is the highest ratio yet reached.

The largest regional decrease, compared with 1931, was 24 per cent, in the Mountain division; the smallest was 8 per cent, in the West North Central States. New England fell 10 per cent, the same as in March. Everywhere else the decrease was greater than in that month: 9 per cent in the Middle Atlantic, 15 per cent in the East North Central, 10 to 13 per cent in the other regions.

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Receivers for Utility Confirmed

Judge Caffey, sitting in the United States Court for the Southern District of New York, confirmed on June 6 the appointments of John K. Garrigues, Herbert W. Briggs and Herbert L. Nichols as ancillary receivers, and of Albridge C. Smith as their solicitor, for the American Commonwealths Power Corporation, and of Messrs. Garrigues and Briggs as ancillary receivers and Mr. Smith as their solicitor for the American Community Power Company.

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General Electric Cuts Dividends

Directors of the General Electric Company at a meeting held May 27 declared a quarterly dividend of 10 cents a share on the common stock, against 25 cents for the previous quarter.

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Utility Plans New Issue to Meet Maturities

Holders of the Central West Public Service Company's $1,000,000 of three-year 7 per cent gold notes due on August 1, which the company reports it will not be in a position to meet at their maturity through public financing or bank loans, and holders of a $200,000 demand loan, callable at any time, have received offers of a new issue of $1,200,000 of three-year 7 per cent gold notes, to be dated August 1, in exchange for their maturing securities. Appointment of receivers has been asked in a bill of complaint filed in chancery court by a stockholder of Chicago. Officers and bankers of the company will resist efforts for a receivership.

O. D. Young Tells Why Leaders Are Lacking

Speaking at the commencement exercises of the University of Notre Dame, South Bend, Ind., where an honorary degree of doctor of laws had just been conferred upon him, Owen D. Young, chairman of the General Electric Company's board of directors, made some slightly startling statements last Sunday. Premising that the insistent call from the people for political leadership was futile in a highly specialized world where the powers of even the President are strictly limited, Mr. Young said:

Today our banking system is threatened, not by conditions which could not be corrected, but by the fact that there is no centralized authority anywhere with power to act. The normal procedures of the several authorities would create delay, even though they were all in agreement, which is too much to expect. And delay is as destructive as no action. I do not complain of this situation—I only call attention to it as the answer to the criticism that somebody should do something promptly. There is no such "somebody."

It is all natural enough. Our democratic government, for its own protection, has from the beginning insisted on sharply delegated powers, with adequate checks and balances, lest the sovereign yoke we enthusiastically and gallantly threw off in the Revolution reappear to destroy our political liberty. It is quite explainable, therefore, that a government of powers widely distributed into carefully segregated and insulated compartments should function under normal conditions and should fail us

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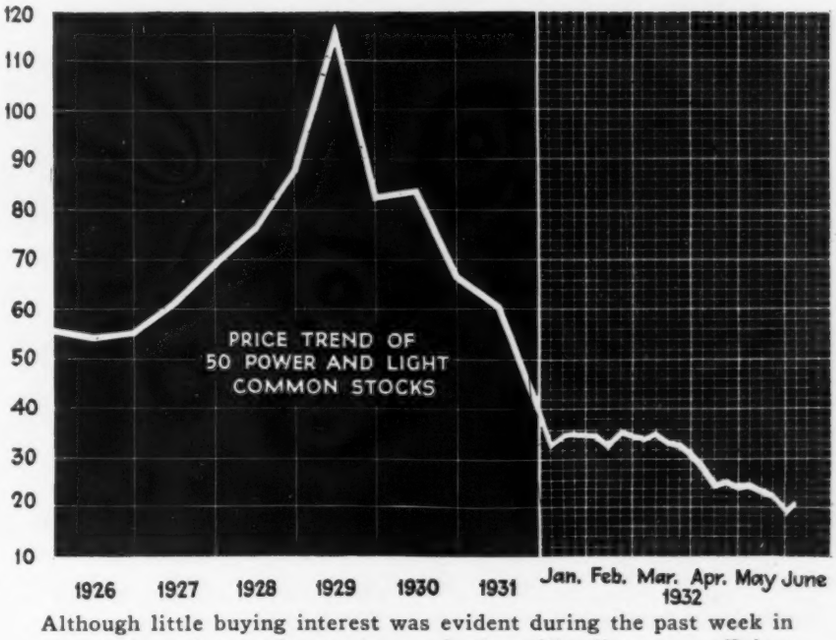
Utility Stocks Recover Slightly



Although little buying interest was evident during the past week in the stock market, moderate changes in the utility list were sufficient to carry the "Electrical World" index to 20.5, as compared with 19.3 for the preceding week.

altogether when the avalanche comes on. It may be that we shall have to consider some method of putting extraordinary powers in the hands of the President in times like these.

Mr. Young, however, left his hearers no reason to regard him as an alarmist or a pessimist, advising his young hearers to pay no heed to those who said standards of living were too high. "It was not our standards of living which were at fault," he asserted. "The trouble was we could not stand prosperity. The fact is that we no longer sought high living standards from honest labor, but extravagance from dishonest gains. This, superimposed on an unbalanced economic base, started our avalanche. Let no one confuse you. Stand by high-living standards from honest and productive labor and set your face firmly against extravagance from dishonest and unproductive gains."

Aylesworth on Maintaining Standards

Merlin H. Aylesworth, president National Broadcasting Company and former managing director of the N.E.L.A., receiving an honorary doctor of laws degree from Drake University, Des Moines, said on June 6: "The vicious circle of unemployment, which results in lowered standards of living, which in turn causes more unemployment and renewed lowering of the standard of living, is already operative. Let us not accelerate this vicious circle. Let us try to maintain the high standard of living which, through our scientific industrial advances, America has earned."

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Street-Railway Loans Cited in Memphis Rate Hearing

Once again the question whether utility owners operating two or more separate businesses should be allowed to recoup losses from one out of profits on another has come up for adjudication—this time by the Tennessee Railroad and Public Utilities Commission in the case of the Memphis Power & Light Company, from which the city of Memphis and Shelby County are seeking to obtain rate reductions.

At a recent hearing E. W. Ford, vice-president of the subsidiary Memphis Street Railway Company, said that that company's ability to continue operations for several years past had been due to loans made by the parent firm. This testimony was objected to by the county attorney on the ground that the street-car company was a separate corporation and that its affairs had nothing to do with the case. The commission took the objection under consideration. A total of $2,662,500, Mr. Ford testified, had been advanced by the power and light company to the railway utility, which had not asked a fare increase.

W. J. O'Brien, vice-president Memphis Power & Light Company, said that the 1932 rate base for that concern would probably be $26,487,000, which would make the rate of return approximately 8 per cent as compared with 8.58 per cent last year. The rate of return from gas operations for 1932 was estimated at only 3.93, while the rate from electric operations was set at 9.67.

▼

Alabama Commission Deals with Consolidated Utility

In 1924 the Birmingham Electric Company purchased at a receiver's sale the street railway, electric, steam heat and gas utilities in Birmingham, and all were thereafter treated as a consolidated utility. After selling the gas company in 1929 the company estimated its electric property to be worth $16,504,633 and the street-railway property at $23,085,684. The street railway earned from 3.3 to 4.2 per cent from 1924 to 1928, but only 1.97 per cent in 1929 and showed a deficit of 0.13 per cent in 1930 and a deficit of 1.3 per cent in 1931. The electric property, however, showed returns of 11 per cent in 1924 and an increase each year until they reached 16 per cent in 1928 and then receded to 14.6 per cent in 1931. The net return on all the utility's properties in the year last named was 5.7 per cent.

The Alabama Public Service Commission recently ordered a reduction in certain electric rates and denied the petition of the company for increases in other schedules so that the total revenue would remain approximately the same. In doing this it said:

We have treated the evidence in this case and have reached our conclusion from the standpoint of taking the street railway and electric properties and operations as a consolidated utility property and operation, but it is not necessary in this case for us finally and definitely to decide the question as to the legality, reasonableness and necessity of holding for the future that such utility properties and operations must be dealt with as one utility operation.

The commission criticised the owners of the utility for declaring a dividend of more than $3,000,000 from the sale of the gas utility instead of establishing a reserve to help the railway properties.

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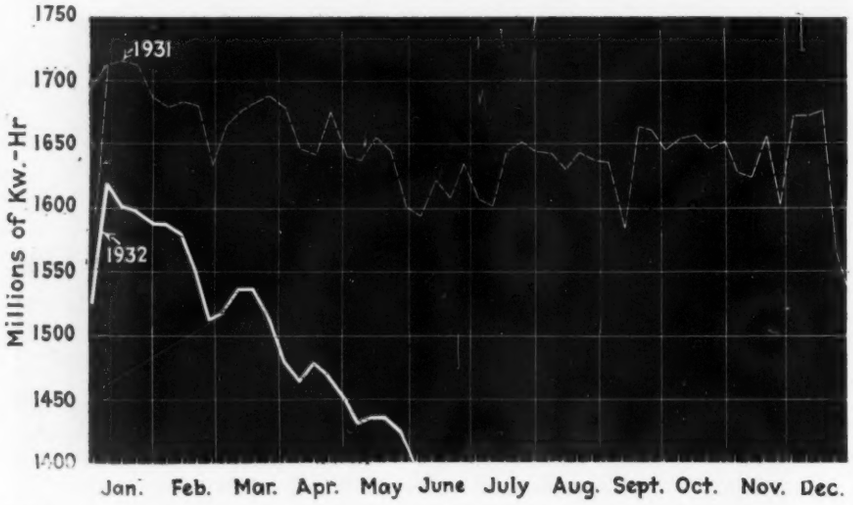
Output Continues 12 per Cent Under 1931



ENERGY output of central electric light and power plants for the two weeks ended June 4 was 12.7 per cent less than in the corresponding period of 1931, according to the National Electric Light Association. The individual weeks are not to be compared because of the holiday which fell on Saturday last year and on the following Monday this year. Considered in relation to the output in 1931 the past seven weeks have shown virtually no change.

Regionally also no important changes are revealed from conditions in the week ended May 21. All geographical divisions are far below the 1931 level, but there are indications of a slight upward movement. New England, previously down 14 per cent, changed to 11.7 per cent; the Pacific Coast from 9.2 to 7.4 per cent.

Weekly Output, Millions of Kw.-Hr.

	1932	1931	1930	1929
June 4	1 381	1,594	1,657	1,690
May 28	1,425	1,602	1,660	1,615
May 21	1,436	1,645	1,723	1,705
May 14	1,437	1,654	1,717	1,704
May 7	1,429	1,637	1,689	1,698

Per Cent Change from 1931

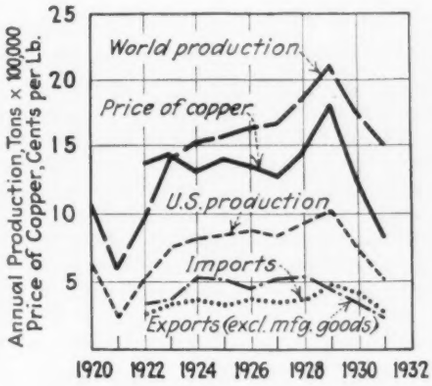
Region	2 Wks. June 4	Week Ended May 28	Week Ended May 21
Atlantic Seaboard	—9.0	.....	— 9.9
New England alone	—11.7	.....	—14.0
Central industrial	—15.2	.....	—16.4
Chicago district	.....	.....	—13.6
Pacific Coast	—7.4	.....	— 9.2
United States	—12.2	.....	—12.7

Tariff May Strengthen Copper Prices Here

Enactment of a 4 per cent import tariff on copper as proposed in the new revenue bill which was passed this week may upset the plan for world-wide curtailment of production agreed upon last winter. This agreement contained a provision ending the pact should either England or the United States place a substantial tariff on the importation of the metal. The probability of obtaining revenue by this means is exceedingly remote because a tariff of 4 per cent would virtually eliminate imports at present prices.

L. S. Cates, president of the Phelps Dodge Corporation, stated that 70,000,000 lb. a month is the present rate of consumption and that if foreign copper is kept out through the tariff, American mines will be able to reopen as surpluses are worked off. There is estimated to be between 800,000 and 900,000 tons of copper in this country at the present time. Mr. Cates believes curtailment of operations will continue for a while after the tariff is imposed, as none of the companies can make any money at the present prices for copper and none will be able to do so until prices are better.

Edward H. Clark, president of the



Cerro de Pasco Copper Corporation, has said that the proposed tariff would cause the loss of much South American trade of the United States. Mr. Clark added that the tariff would not help the American copper industry and would produce no revenue for the government. Retaliatory tariffs would be passed by foreign countries as soon as the impost is enacted, Mr. Clark declared. He predicted the collapse of all co-operative efforts of American and foreign copper producers.

The price of copper ranges from 5¼ to 5⅜ cents a pound, as compared with 5⅛ cents, the all-time low recently reached. The General Cable Corporation has lowered the price of bare copper wire in carload lots ½ cent a pound to 7½ cents and of magnet wire also ½ cent to 9 cents. Price of weatherproof wire has been reduced ¼ cent to 9.75 cents a pound. The Anaconda Wire & Cable Company has reduced the price on carload lots of bare copper wire and of magnet wire ½ cent a pound and the price of weatherproof copper wire ¼ cent. Phelps Dodge Copper Products has made the same reductions in prices.

Probably in reaction to cabled reports on the proposed tariff legislation, export business continued to decline in volume, prices on the foreign market being below the American domestic price for the first time in years.

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Schenectady Workers Once More Rise to Emergency

A plan has been initiated by the Schenectady works employees of the General Electric Company, approved by their works council and affirmatively voted by a large percentage of workers to increase the deduction from the earnings of each employee receiving 50 per cent or more of his normal rate to 2 per cent from June 1 to August 31, instead of the 1 per cent provided in the original announcement of the unemployment emergency plan effective December 1, 1930. The increased amount which will be realized for the purpose of unemployment relief payments to employees will be matched by an equal contribution by the company. This applies only to the Schenectady shop organization and does not affect any other part of the company's organization.

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Washing Machine Makers Report Increased Activity

Not to be outdone by the hard-working promoters of electric refrigerators, ranges and air-conditioning units, the makers of electric washing machines are planning to get their portion of the consumer's dollar in 1932 appliance sales. According to Joseph R. Bohnen, secretary of the American Washing Machine Manufacturers' Association:

"There is increasing general public interest in labor and money-saving home equipment. One washer manufacturer has added 1,000 dealers since January 1. Another is setting up special organizations for intensive washer promotion in 23 of the largest cities. Another firm active in the washer field is in the midst of a month's campaign in which 35,000 employees of related concerns are pledged to sell at least one unit each.

"Twenty distributors have been added by one manufacturer in 60 days. Utility companies operating 5,000 stores have added one line of washers. There are many special demonstrations of how household washers clean all garments and linens. One manufacturer is making a point of cultivating such unusual fields as barber shops, restaurants, clubs, institutions with individual washing problems, and the like. Household washers even have been installed on a Pacific Coast steamship company's vessels. In Fargo, N. D., where dealers said every one owned a washer, 60 were sold at full price in a special ten-day campaign.

"Our manufacturer - members see numerous gleams of bright light along their horizon. They are convinced that a new business day is dawning."

Major New Construction This Week

MACHINE drives, heavy-duty motors and controls, power substation equipment, pumping machinery, etc., will be installed in oil-refining plant to be built in Montreal, by Shell Company of Canada, Ltd., Toronto, affiliated with Shell Petroleum Corporation, St. Louis. Site is being purchased. A $1,500,000 project.

Until June 20 Constructing Quartermaster, United States Army, San Rafael, Calif., asks bids for electrical distributing and street-lighting systems at Hamilton Field, Calif. Also, for group of buildings at same location, to cost over $800,000. Entire cost $1,000,000.

Call for bids has been authorized by Board of Regents, University of Texas, Austin, Tex., for new power plant at institution; estimated cost over $100,000 with equipment.

Heavy-duty and auxiliary electrical equipment will be installed in rolling mill of Colorado Fuel & Iron Company, Pueblo, Colo., at cost of $100,000.

Heavy-duty motors, controls, power substation equipment, pumping machinery and other electrical equipment will be required for a $1,000,000 expansion and improvement program to be carried out at oil-refining plant of Marathon Oil Company, Fort Worth, Tex.

Bids are being asked by United States Marine Corps, Quartermaster Department, Washington, D. C., until June 24, for 1,056,000 ft. rubber-insulated field wire; also for ten field telephone switchboards (Schedule 924).

An appropriation of $60,000 will be expended by Midland Counties Public Service Corporation, Fresno, Calif., for rerouting and rebuilding of 70,000-volt transmission line from San Luis Obispo to Cuesta district.

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New York Metal Prices

	June 1, 1932 Cents per Pound	June 8, 1932 Cents per Pound
Copper, electrolytic	5.25@5.33	5.33
Lead, Am. S. & R. price	3.00	3.00
Antimony	5.12½	5.12½
Nickel, ingot	35.00	35.00
Zinc, spots	3.25	3.15
Tin, Straits	20.75	19.66
Aluminum, 99 per cent.	23.30	23.30

Wallett Heads Vermont Association

William Wallett, electrical engineer of the Vermont Marble Company, Proctor, Vt., was elected president of the Vermont Electrical Association at the recent annual meeting in Burlington. Other officers are J. W. Sheehey, Burlington; Hugo Rocktashel, New England Power Engineering & Service Corporation; Wilfred Smith, Woodstock, and Carl M. Jennings, Burlington.

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Citizens Repudiate "Taxless" Idea

Torrington, Wyo., will no longer be listed among the "taxless towns" which have achieved that distinction through municipal ownership of electric light and water plant revenues. By a decisive majority Clyde Smith has been elected Mayor on a platform that called for direct taxation and repudiation of the system whereby electric light and water users paid all city expenses. Mayor B. F. Redfield, the defeated candidate, advocated continuance of the "taxless" method. Torrington owns its distribution system but purchases energy from the United States Reclamation Service hydro plants at Lingle and Guernsey, 5 and 30 miles distant, respectively.

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Rate Slash Offered St. Charles, Mo.

An offer by the Union Electric Light & Power Company to lower its electric rates at St. Charles, Mo., from 10 cents a kilowatt-hour for the first 15 kw.-hr., then 9 cents and 3 cents, to 8 cents for the first 27 kw.-hr., then 3 cents, provided that a 20-year extension of the company's franchise be granted, has been made. Acceptance of this offer would preclude building the talked-of municipal plant (ELECTRICAL WORLD, May 14, page 842).

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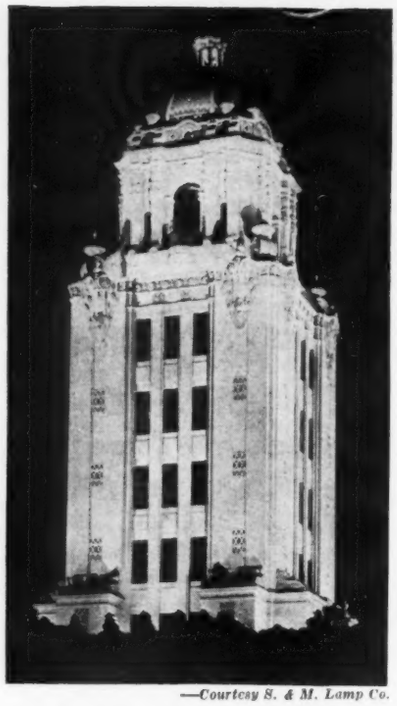
No Oregon Power Districts Yet

Although a year has elapsed since the Oregon Legislature enacted laws intended to result in the formation of people's public utility districts, the establishment of such developments is still extremely remote, according to all available records on file with the Hydro-Electric Commission. The first attempt to set up a district was abandoned when the advocates of the project declared their inability to comply with the statute on account of the alleged existence of "impossible complexities" in the rules and regulations for filing preliminary petitions. A second effort failed because, after making preliminary investigation, the commission decided adversely. The commission is now completing its preliminary examination of a third project, that of the Hood River County Utility District. The outcome will soon be known.



—Courtesy S. & M. Lamp Co.

FLOODLIGHTING AN ART IN SOUTH CALIFORNIA

Fifty-one floodlights illuminate the tower of the new city hall of Beverly Hills, Calif. The building is silhouetted in pure, silvery white, while the inside of the dome is lighted in rich magenta. Topping this, the pinnacle stands out in a brilliant blue.

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Power District Near Port Angeles?

Petitions for authorization of a power district under the Washington State law of 1930 have been signed by residents of the territory west of Port Angeles, including the Elwha, Edgewater, Eden, Freshwater and Joyce districts. The law referred to authorizes rural districts to form public utility districts under the provisions of the law and to furnish water and power to the residents of the district.

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Canadian Electrical Association

Meeting at Murray Bay, Quebec, June 15-17, the Canadian Electrical Association, besides the usual full program of committee reports and discussions, will hear three papers. H. M. Towne, General Electric Company, will describe improved methods of lightning protection; A. E. Davison, Hydro-Electric Power Commission of Ontario, will talk about vibration of conductors, and A. M. Dudley, Westinghouse, will outline the present trend of development in the industry. Premier Taschereau of Quebec will speak at the banquet.

Bellingham Demands Lower Rates

Citizens of Bellingham, Wash., have petitioned the State Department of Public Works for a reduction of 35 per cent in electric rates. The petitioners assert that power rates in Bellingham are 275 per cent higher than in Seattle and 25 per cent higher than in Everett. Some citizens are agitating for lines from the Skagit plant. A new five-year contract for the Puget Sound Power & Light Company will be voted on next November.

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To Sue Nebraska Power for Taxes?

Demand has been made by Mark M. Shaw, secretary of the Greater Nebraska Club of Omaha, that the county board bring suit against the Nebraska Power Company for $619,000 he says is owing as franchise taxes. Since 1929 the company has paid taxes on a franchise value of $1,000,000, fixed by the State Board of Equalization, and the contention is that as the law was passed in 1921 the company owes franchise taxes back to that date. Mr. Shaw asserts that the Federal Trade Commission inquiry has developed that the company bought its franchises from the Omaha Electric Light Company in 1913 for $2,000,000 and wants suit brought on that basis.

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North Carolina Municipal Scheme

The City Council of Shelby, N. C., has before it an ordinance, expected to pass, authorizing the execution of a contract with the Fisher-Blake company for the purchase of electric power. The Fisher-Blake company has made similar proposals to other towns in the same region and contemplates building a generating plant to supply them, undertaking to turn back 40 per cent of its profits each year.

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Public Utility Advertising Program

Three sessions of the Public Utilities Advertising Association will be held on June 21 and 22 at the Waldorf-Astoria Hotel, New York, as a part of the yearly convention of the Advertising Association of America. A general discussion on "The Influence of the Times on Institutional Advertising" will be led by Louis D. Gibbs of the Boston Edison company and participated in by Henry Obermeyer, Consolidated Gas Company of New York; William H. Culver, Commonwealth Edison Company, and B. J. Mullaney, People's Gas Light & Coke Company, Chicago. Other discussions will include one on "New Advertising Tools for Today's Appliance Market," led by D. D. Parry, Central Hudson Gas & Electric Corporation, and J. R. Pershall, Public Service Company of Northern Illinois.

Some Special Features of Paris Electrical Congress

President Lebrun of France will preside at the official opening of the International Congress of Electricity when it convenes in Paris on Tuesday, July 5, after reception of the members on the previous day, at 252 Faubourg St. Honoré, where plenary and section meetings will both be held. At the initial session there will be a speech by Paul Janet, president of the organization committee, and a lecture by P. Langevin, president of the scientific committee. Inspection and sightseeing tours will fill the afternoon, and there will be a banquet in the evening.

A reception at the Hôtel de Ville by the Municipal Council of Paris is expected to take place on Wednesday afternoon, a joint meeting with the French Society of Electricians (which corresponds to the A.I.E.E.) on Friday evening, and a tour to Rouen on Sunday. There will be section meetings and inspection trips every weekday. After the congress closes on Tuesday afternoon, June 12, a trip to the newest French hydro-electric plants and to points of tourist interest will be organized.

Prior information about this congress was contained in the ELECTRICAL WORLD for January 9 (page 78) and May 28 (page 919).

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Research at Ottawa to Pick Best Lamps to Grade Grain

Construction of artificial lighting units suitable for grading grain has been engaging the attention of the National Research Council of Canada at Ottawa. The problem has been attacked from two points of view—first, the production of a light as nearly as possible the same color and consistency as daylight; second, the construction of lighting units producing illumination of various colors or combinations of colors which would emphasize the bad and good points of the grain.

A number of daylight lamps of several types were tried in various arrangements so that the best intensity, uniformity and diffusion of the illumination were obtained. An experimental cabinet containing three lights of different colors (neon lamp, mercury-vapor lamp and the General Electric sun lamp) was built so that the intensity of the illumination from each lamp could be varied. The lights were so adjusted that starchy, green wheat and frozen wheat, etc., could be most readily distinguished from good wheat. In the choice of the daylight units advantage was taken of consultations with engineers in the illumination department of the Canadian General Electric Company. These lighting units were examined by representatives of the Board of Grain Commissioners, and two units were considered worth a prolonged trial.

It was thought that if certain of the blemishes in wheat showed marked selective reflection, grading could be made easier by examining the reflected light from a sample of wheat by means of a photo-electric cell and light filters. The light reflected from picked samples of various types of wheat has been examined spectroscopically, and it has been found that there is not sufficient selectivity to facilitate the grading of grain by this method. For this purpose ultra-violet as well as visible light has been tried.

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ELECTRICITY NOW DRIVES DIVING BELLS

—*Acme*

Two electric motors, receiving current through a cable attached to a ship, drive two propellers that will send this "diving bell" backward or forward on the bottom. Emil Kulik, the inventor, demonstrates at the international patent show in New York.

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Lighting-Service Engineers to Fight Curtailment

Serious determination and tangible plans to reduce curtailment of lighting services both for streets and highways and for commercial buildings were evidenced at the summer lighting conference held last week at the Electrical Institute of the Electrical Association of New York.

"There will be, inevitably, a certain amount of curtailment," A. F. Dickerson, chairman of the N.E.L.A. subcommittee on promotion and sale of street lighting, said, "but it can be minimized. Hold it to 10 per cent or less."

"There are things on which we dare not economize," Ward Harrison, General Electric Company, told the gathering of about 50 men at this meeting, "for instance, fire insurance and milk for children. Street lighting and its protective value should be viewed in a similar manner."

How to forestall the tendency in commercial practice to cut down on the use of energy for lighting purposes was emphasized by E. L. Canfield of the American Gas & Electric Company, who urged the maintenance of the idea that the "lighting system is a salesman" for the merchant. Mr. Canfield demonstrated a compact, portable photronic unit used by his organization to show on the customer's premises the value of direction control, lamps of proper voltage, high-grade lamps, proper wall colors and adequate lamp sizes.

R. D. Mailey, vice-president of the General Electric Vapor Lamp Company, said that with a sodium vapor lamp air-jacketed to maintain a gas temperature of 300 deg. C. it is possible, if glass of the necessary characteristics can be procured and some present difficulties overcome, to develop the amazingly high efficiency of 300 to 315 lumens per watt.

S. E. Hibben, Westinghouse Lamp Company, predicted that within a year or so gaseous illuminants will be rather firmly established for certain purposes, mainly decorative.

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Television Brings Derby to Theater Audience

Characterized by the inventor, J. L. Baird, as "a reasonably successful experiment considering the great technical difficulties involved," a television demonstration in London last week brought to an audience of 4,000 in a motion-picture theater the classic horse-race event of England, the Derby, as it was run on Epsom Downs.

This is said to be the first time such a demonstration has been attempted on so large a scale and marks the successful presentation to large audiences by television of outdoor events not under control as to sequence or lighting. It is said that on the 9-ft.x7-ft. screen the black and white images of the racing horses could be clearly observed as they neared the winning post. Even the stripes of the jockeys were distinguishable.

Three large drums, each with 30 mirrors fixed around its circumference, were rotated synchronously at Epsom Downs and London, so the pictures were three times the normal sizes obtained. The images to be transmitted by the Baird system were reflected by mirrors to photo-electric cells and the resulting electrical signals were flashed over three land lines from the television camera on Epsom Downs to the theater.

EDITORIALS

L.W.W.MORROW
Editor

Critical and Constructive

THE N.E.L.A. convention and exhibition this week in Atlantic City was a success. It proved the quality of leadership that refused counsels of defeat. This convention was a needed tonic to the industry and has contributed ideas that will bear fruit.

One of these ideas was that the industry will best go forward by selling and not by chiseling away its research and operating forces and internal structure. Others embraced constructive and informative suggestions that will permit a reduction in costs without injuring the efficiency of service. Still another urged devoted efforts to bring about good public relations, emphasizing the point that good service is rendered only by intelligent and informed employees. Education of employees concerning the business, development and promulgation of facts about the business, courteous and good service to communities —these earn good public relations.

A striking commentary on the convention was the fact that few "taboo" subjects remain in the traditional files. Unemployment benefit and insurance studies were suggested by President Owens. A plea for more uniformity in rate forms and for more understandable rates was made in a satirical masterpiece by P. M. Downing. The correct economic principles of generation and transmission were stated frankly by H. P. Liversidge. But an even more courageous suggestion was made by Floyd L. Carlisle. He urged this voluntary trade association to defend its good name and its credit position by taking direct disciplinary action against any utility whose leaders jeopardize the entire industry by embarking upon unsafe and unsound financial and policy programs. The industry can keep its credit sound and can keep its house clean by this vigorous co-operative action, using publicity as its most powerful weapon. This is the between-the-lines policy trend we read into the sane and courageous statements of Mr. Carlisle.

Above and beyond the definite and constructive suggestions made for the solution of current problems in the industry, a searchlight beam was projected into the future by J. C. Parker, S. M. Kintner. C. F. Kettering and others. They showed that the storehouses of nature have not been scraped clean; they told the financiers and business men that they have not built permanent assets but only short-lived and quickly obsolescent tangibles that can be tumbled down about their ears by some "crack-brained" or "foolish" engineer or inventor at any time—and will be. Technological progress has not stopped and cannot be stopped or even controlled by business, law or budgets. A glance at the exhibits and attention to the messages of these prophets gave to the delegates a glimpse of the remarkable era ahead.

Then again every one attending this meeting gained renewed confidence in industry leadership. The leaders have not quit, and a definite impression was gained of the shirt-sleeved, intelligent and fearless fighters who composed the property executives gathered in Atlantic City. They are

fighting now; they have faith in their business and in the future of this country and its institutions. We repeat, the convention was a success and gave to the industry inspiration, information and courage to build for itself the structure it visions.

Action should be had on merchandising problems

BUSINESS aspects of electrical merchandising deserve serious consideration by industry leaders who formulate policies. Some of the major problems now confronting the industry are:

1. Anti-merchandising legislation, both state and national, confronts utilities, forcing them to consider several alternatives:

(a) Withdrawal from merchandising and the development of other sales outlets.

(b) Withdrawal from merchandising except for pioneering appliances such as ranges, water heaters and refrigerators.

(c) Continued merchandising of all appliances with full co-operation as well as competition with other sales outlets under fair conditions.

2. Handling of time-payment financing for both dealers and consumers with several alternative methods available.

(a) National financing concerns. These charge high rates and will not do business with small dealers. They fix credit on net worth basis and charge about 16 per cent.

(b) Local utility financing. Time-payment paper of all outlets is financed by utilities in several instances.

(c) Co-operative local financing. This calls for a local corporation financed by the utility, manufacturers, jobbers, distributors and dealers. It usually requires underwriting by the utility or manufacturers, but can be operated at a low cost if wisely administered.

(d) Financing by manufacturers. This method has not been applied to consumer financing but has reached a stage whereby some jobbers and utilities are financed directly or indirectly on their appliance purchases.

3. Pricing of appliances and discounts.

This problem involves a determination of "quality appliances" and the use of several standard classes of the same appliance in order to reach different groups in consumer markets. It also introduces the mechanism of distribution in that all sales outlets should buy under the same discount conditions. A third element lies in the use and maintenance of list prices while yet making campaign selling possible.

4. Local participation in sales promotion.

This introduces the joint expenses associated with local advertising, demonstrations and exhibits, installation costs of major appliances and support of local co-operative sales groups such as the electrical leagues. Definite proportions of expenses, dues and responsibilities must be allocated.

5. Extent of responsibility for performance, service and "reverts" between sales outlets and manufacturers, jobbers and distributors. Guarantee policies and their effects.

6. Interchange of information and control of practices in local areas.

Centralization of statistics, agreement upon principles of merchandising, control of local codes and ordinances, information of the experience of others—all these things require an organization and a method to attain permanent beneficial results.

In each territory local outlets can go only so far in reaching agreement on these problems, and national commitments by large holding companies and by manufacturers soon become necessary. It is high time that these problems be solved, for they now form the handicaps to rapid sales in the markets—the objective of all participants.

Public utility rates and economic conditions

STRONGLY discouraging to hopes of revival of prosperity is the defeatism of those who suffer more from economic changes and try to drag down to their level of unhappiness those who suffer less. Resentment is a strong emotion, and to no other cause can there be ascribed the present clamor for sharp and arbitrary reduction of utility rates. Misery demands more misery for company, regardless of equity or a future economic salvation.

The recent ruling of the Public Service Commission of Wisconsin admitting testimony relative to general economic conditions as relevant evidence in its investigation of the rates of the Wisconsin Telephone Company is a signpost of such defeatism. Admittedly the only purpose of that kind of testimony is to show by contrast that the respondent in the case is enjoying a prosperity greater than the average. This proved, action might conceivably be taken to assure a reduction in telephone earnings to the leanness of the mean value of all corporate earnings.

It may be that the mandate of administrative authority given to a commission contemplates that it will be intensive and extensive enough in function not to assume an air of blind obliviousness to a state of depression. To use current data in showing that a dollar will buy more services and supplies also means recognizing that a dollar today will buy far less capital money. If rates come down, it should be because of the working of these conflicting factors and not because consumers have a notion that messages and kilowatt-hours are like the market commodities which choose to follow saw-toothed curves with their alluring peaks and disconsolate valleys.

The Atlantic City Convention

Attendance, exhibits and program rouse enthusiasm.

N.E.L.A. constitution revised.

Diversified program excites interest.

Exhibits show progress in equipment

FROM the time President J. F. Owens opened the 55th convention of the National Electric Light Association there was presented continuous evidence of the wisdom of holding the meeting and the exhibits this year. Some 3,500 electrical men and women came to Atlantic City and they were widely representative of the industry. The exhibits also, except for the customary display of electric refrigerators, were very comprehensive and splendid program arrangements provided the time to see and study the new products. Well-attended business sessions contained discussions of industry problems and several programs of great importance to the industry were appraised.

In his address at the opening session President J. F. Owens gave the keynote of utility sentiments. He stressed the courage of the industry and its faith in its future development, he accented the need for all in the business to understand it better so that they might serve better, and he stated that the chief function of the business was selling, and that this activity, especially in the home market, should be maintained aggressively during the present period. In line with present social and economic thought, President Owens suggested that a study be made to arrive at some plan of unemployment benefit and insurance. He congratulated and commended the manufacturers who had come to the convention to exhibit their products.

Another notable address, by B. C. Cobb, traced the history of the N.E.L.A., showed how and why it was formed and stated the present background for this very necessary voluntary and non-profit making trade association. Mr. Cobb urged that constructive criticism be heard and heeded and stated that any mistakes made in the rapid development of this business should be corrected. He stressed the intimate nature of the relation of utilities to their customers and the need for state regulation only as the control element.

At the opening meeting the constitution of the association was revised. The major change provides for the election of officers upon a new basis and the budgeting of dues and expenses upon an annual basis. The chairmen of the national sections of the N.E.L.A. are automatically made the only vice-presidents for the organization. At the first session the new managing director, B. F. Weadock, was introduced. Mr. Weadock stated that the association budget had not been reduced so as to injure efficiency and added that the basic policy he was following involved making the activities confine themselves to members. Headquarters would try to compile and study all possible data and experience on industry problems as an aid to members. Current problems were social, technical and economic in the mind of Mr. Weadock and he solicited constructive suggestions and criticisms.

D. C. Green outlined the program and policy of the public relations work and said internal education of employees had been stressed as a major objective with very positive results. A call for new ideas and less standardization was made by C. F. Kettering. He stressed the necessity for research to avoid economic and technological stagnation and said wide and radical changes can and will be made by the apparently non-commercial ideas of engineers and inventors. He said our present troubles arise largely because we haven't the nerve to use our imagination to fight for a way out. He urged that tension be relaxed and permission be granted to let conditions go in the direction they desired to go and the engineers and inventors should get business aid to enable them to try out apparently foolish things.

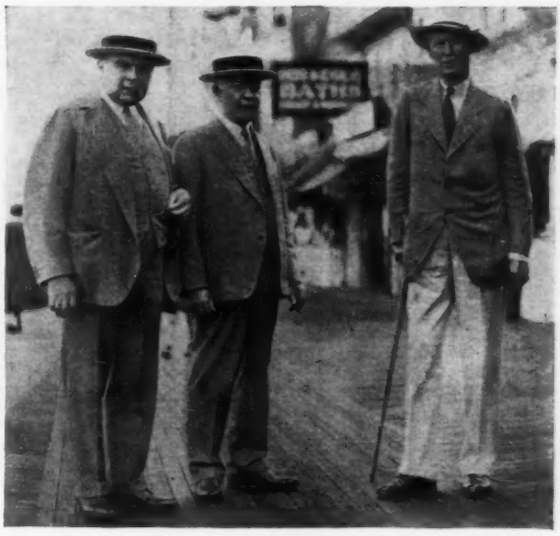
Business aspects in engineering

Instead of reaching an apex to be followed by slackened progress, engineering is merely on the threshold of newer and greater advances. That is true of the strictly technical field and of the application of engineering technique to other departments of electrical enterprises, as was emphasized by several of the speakers at the session conducted by the Engineering National Section. Chairman Kehoe was sure that the economic pressure now imposed on the engineer would perforce originate new ideas and new methods for the rejuvena-

tion of all business. In the meantime the slackened requirements of design and construction have brought operation and administration into a dominant position of attention. President John C. Parker of Brooklyn Edison Company made clear that accounting, rates, valuation, commercial competition and general administrative technique for economical and efficient operation need the application of the engineering process of thinking as never before. Within the domain of the engineer in his technical field are plenty of unsolved tasks to engage his active interests in the immediate future, according to A. E. Silver. There are jobs to do in improving economy in operation and maintenance, the engineering of system protection and load building, establishing a capacity for service at low increment costs, general unification and simplification of design.

Particularly successful in inspiring the large engineering audience to sense the impending developments in the technical field were the talk and the experimental demonstration by S. M. Kintner of the Westinghouse company. He cited many instances where dismal predictions in literature had been made—that, for example, aviation could never be a *fait accompli* or that invention long ago had exhausted the possibilities of science. To add romantic force to his ridicule of such current pessimism Mr. Kintner put on a demonstration with the assistance of Drs. Thomas and Slack. One hinged on the topic of electric space heating and another on the undisclosed possibilities of thermionic tubes for control purposes. A third hinted the potentialities of high-voltage direct-current energy. In the first instance a radio speaker was made to change the pitch of its audible note in accord with the energy radiated by panel heaters to a thermopile. Low-temperature wall heating makes possible the use of lower temperature maintenance of space heating without discomfort because the heat radiated from the panels compensates for the 40 per cent heat loss from the body by radiation process. This field of load building has immense possibilities. Also, the reversed refrigeration cycle requires only one-fifth or one-seventh as much electrical energy for space heating as to maintain the same temperature by direct application of electrical heat.

C. L. Harold, J. C. Parker and H. R. Woodrow



T. A. Kenney, B. F. Morrow and R. F. Pack

The economic problem created by the competition of the Diesel engine came in for frank acknowledgment in the remarks of several speakers at the engineering session. Briefly summarized into one thought, the reaction is that central-station service has inherent advantages over individual generation and therefore it behooves the economic engineers of the utility industry to adapt the advantages of the oil engine, temporary or permanent, to the central-station system. Thus two sets of inherent advantages will conspire to meet and overcome the handicaps of the competitive situation.

In his address J. C. Parker pointed out the necessity for the business and economic aspects of modern engineering. He stated that he had no fear of such things as banker control or technological standardization if the engineers measured up to the opportunities now on the horizon. It is primarily the task of the engineer to prove his competency as one component of the business, and if he does so his position in the industry is assured.

Accountants hold forum

Rather than have formal papers presented at the meeting of the Accounting Section session an innovation, at least in so far as recent N.E.L.A. Atlantic City conventions are concerned, was introduced by endeavoring to set up an open forum where discussion might be developed on various controversial topics. These included the fundamental accounting approach to appliance sales, present conditions and policies in regard to volume of credit and collections, the progress which has been made toward standardization of financial reports to various agencies, the desirability and fairness of the retirement accounting theory versus the straight-line depreciation ideas, the advantages of accurate and full property records and the question of whether or not discredit has accrued to budgeting practices, notably operating budgets under depression conditions.

Experience thus far indicates that, in general, the electric utilities are not being affected adversely by the depression in their collection of bills for energy consumed, though one speaker stated that collection losses for the country aggregate four times the fire losses and could therefore obviously be improved. Losses range, as

reported, from 0.3 of 1 per cent to 0.7 of 1 per cent. On one property it was estimated that the maintenance of a $5 deposit for domestic service accounts would have reduced the bad collections from 0.7 to 0.5 per cent. United Electric Light & Power (New York) reported

D. M. De Bard and George Brown

W. H. Sawyer and B. C. Cobb

that whereas a year ago about 20 per cent of the current bills required collection methods, this figure is now 30 per cent. Hartford Electric Light's plan for extending credit to unemployed and financially embarrassed customers is working out well. Approximately 1,000 credit certificates have been applied for, and while a bill loss of $15,000 has been estimated as a possible maximum, this was pointed out to be far more than the actual loss which might be looked upon largely as the fuel charge equivalent when the public relations and good will values are considered. Cities Service and Middle West reported an abnormal return of appliances contracted for on the partial-payment plan.

Some properties continue to refund deposits when credit has been established through prompt payments over a certain period of time; others require more rigid deposit regulations than before. Cities Service reported notable success at reduced collection cost when telephone and mail collection policies supplant to a considerable degree personal solicitation.

"Selling merchandise primarily for a profit is not a function of a public utility company," stated H. C. Hasbrouck of H. C. Hopson & Company. He further contended that "appliance sales by a utility is just one form of new-business expense and should be so treated." There were no dissenting voices. Mr. Hasbrouck urged co-operation with independent dealers and expressed the opinion that eventually, "if public utilities did not sell appliances on their own account, they would have to do so, and maintain a fairly large staff for the purpose, in behalf of the independent dealers." He reported a recent experiment on one property following just such a co-operative plan.

The opinion was several times expressed by speakers that the results, disappointing alike to utilities, dealers and manufacturers, in those states having anti-utility merchandising laws might soon evidence repeal of such statutes.

Vehement denunciation of efforts to alter the established retirement accounting theory was offered by H. M. Brundage, vice-president of the Consolidated Gas Company, who saw in the straight-line depreciation reserve theory a fundamentally inequitable proposition. Citing his own field as an example, he found that retirements of property on company books were due approximately 60 per cent to inadequacy, 25 per cent to obsolescence and 15 per cent to deterioration. Mr. Brundage contended that an accounting practice based upon but 15 per cent of the properly allocable charges led to manifest absurdities.

Progress toward desirable standardization of accounts was reported by J. H. Lobban of the Detroit Edison Company, section chairman, to be proceeding satisfactorily. In discussing the work of the committee appointed some time ago for the standardization of financial reports to insurance companies, banks, brokers, investment counsel, publishing companies and associations it developed that but one meeting of this committee had been held and although the possibilities of realizing economies in time and labor through the use of a standard form were excellent, considerable difference of opinion existed as to whether such an attempt for concerted uniform standardization of information should be attempted for all companies. It was reported that one organization handled 250 different questionnaires in the first four months of this year which in their simplest form would have involved about ten separate pages and actually represented about twenty-four.

In urging the development on each property of accurate, centralized property records, C. M. Breitinger

B. F. Weadock and Edwin Gruhl

A. C. Marshall

John Learned and R. H. Tillman

of the Philadelphia Electric Company said: "If we believe in the integrity of the capital account to represent the property investment we must enter property at actual cost and charge it off accordingly." Mr. Breitinger offered as further advantages of accurate property records the importance of avoiding reappraisals for insurance purposes, simplification of income tax difficulties which have their own essential requirements and the value in local tax assessment questions.

"Operating budgets have not been discredited by recent developments," contended A. W. Morgan of the Toledo Edison Company. "Budgets must be flexible, since they are based upon an assumption of definite conditions to be encountered. If those conditions change so must the budget."

Rates and power

At the second general session, aside from committee and section reports, rates and power transmission were in the limelight. P. M. Downing pointed out the multiplicity of rate forms existing for classes of service and also stressed the technical and complex character of the existing rates from the point of view of the user of service. Users do not understand rates or why rate forms differ, and this creates distrust. In the opinion of Mr. Downing, the genesis of rate forms and their modification over the years have led to complexity and not to simplicity. He urged the industry first to rationalize and simplify rate forms and then simultaneously try to arrive at a rate that could be understood by the customers.

The economics of power transmission, with emphasis upon interstate transmission, was discussed by H. P. Liversidge. He said a very inaccurate conception existed in many minds that electric power transmission over long distances was the trend for the future. He stated that the utilities themselves, through publicity on long-distance synchronized interlinking, had largely created the erroneous picture. As a matter of economics the average distance for energy flow is now about 22 miles and is decreasing, and less than 15 per cent of the energy generated crosses state lines. Economic facts alone dictated the use of multiple generating stations at the several load centers in a region, and transmission then became an emergency or economic operating necessity through connections between stations. Transmission is getting more and more used as an emergency relief, an economic operating asset, a method for reducing reserve capacity and a means to stagger construction. Any kind of artificial barrier will stifle economic interconnections.

Commercial results and plans

The Commercial Section recorded a remarkable list of actions and plans as outlined by Chairman Kennedy. He told of the million-refrigerator campaign, the water-heater work, the advent of air conditioning, wiring opportunities, small appliance sales and petroleum industry sales. J. E. Davidson said the sale of refrigerators for the first four months aggregated 24,000 and that the goal for this year was 1,000,000. Prizes for merit in the work of the Refrigeration Bureau were awarded to several units, with C. L. Edgar voted the best regional director, W. A. Buttrick the best state director and C. E. Michel the representative of the best local bureau.

A ringing address by P. S. Arkwright sold the co-operative range idea. Mr. Arkwright has recently become chairman of the National Electricity Cooking Council and he is now leading the battle in an endeavor to establish local bureaus in each community and plan for local co-operation in range sales. He showed the revenue and equipment sales opportunity and what they would mean if 3,000,000 ranges were sold in three years.

On Thursday night at the public policy meeting, presided over by P. S. Arkwright, an address on the economic and policy aspects of the industry was delivered by Floyd L. Carlisle. An abstract of this address follows:

"The electric light and power business is complicated, scientific and very much specialized but at heart it is simple.

"Our corporations are creatures of the various state governments and are chartered to generate and distribute electricity at fair and reasonable prices. This is the formula for the management of our corporations to follow. Efforts to evade or circumvent that formula are fundamentally dishonest, not to say stupid and asinine, and furthermore such efforts are wholly bad business.

"Such public criticism against the industry as is deserved and merited has very largely had its origin in efforts made within the industry itself to avoid that formula. Under the guise of management and supervisory contracts efforts have been made here and there to charge the operating companies with unreasonable

and improper costs. This practice has not been general within the industry nor is it representative of its best thought. In my judgment it is the duty of this association to take an active hand in stamping out such practices.

"I am happy that our association has you back to first principles. We have become, by the changes in our constitution and by the clear expression of our membership, a pure trade association. We must enforce the highest ethical and business practices within our membership. I repeat that the purpose of this industry is the generation and sale of electricity at fair and reasonable rates and no other, and that any company violating that purpose should not be permitted to remain within the association.

"No corporation has successfully performed its work in the world unless its employees receive fair and adequate compensation, the competent employees are reasonably secure in the permanency of their employment and, assuming that business prospers, that provisions for sickness and disability are made.

"The cheapness of electricity to the customer depends on the maximum use of the generating and distributing plant. Industries have filled in the valley and in every case where industrial markets have developed the rates to other classes have been lowered.

"I am very sure that an honest comparison anywhere on the North American continent would demonstrate that regulated utilities are doing a better job at lower rates, all factors including taxes included, than operations by municipalities or governments.

"I doubt the wisdom or necessity of introducing any new regulatory or supervisory factor such as federal activity into the rate situation.

"It is difficult for me to believe that present so-called market values for securities reflect or even approximate real values.

"Holding companies are primarily corporations that own securities rather than fixed property. The government has not hesitated to create such corporations. The Reconstruction Finance Corporation is one. Federal Land Banks are others.

"Investors in the sound companies of this industry have no cause for alarm. The industry is fundamentally sound."

Edison memorial presented

Spiritedly defending the engineer and exhorting executives of the industry not further to destroy the "production group," A. H. Kehoe, chairman of the Engineering National Section, told those at the general session on Thursday morning that "there is a tendency to compromise the progress of the future in order to save in the present. New and improved utilization needs good service at a low price. We cannot go forward if the production group is destroyed."

Research work, said Mr. Kehoe, has suffered badly, being allowed but a small fraction of the funds formerly assigned for that purpose on various properties. It was his plea that joint research efforts would yield good results at low cost and that curtailments should only be temporary during the period of extreme emergency if the progress of the industry and art is not to be seriously retarded.

"He who is not in business to make money is not in business," P. A. O'Connell, president of the National Retail Dry Goods Association, told the delegates. "People want electrical appliances. The industry has not reached the point where the most economical and efficient means of distributing them must be found. Manufacturers should select as outlets those stores or agencies whose character is such as to add to the prestige of their products. Prices should be as low as they can be and still allow reasonable profits. The one safe course to which we can safely hold is the course of quality."

A feature of this session was the memorial ceremony for Thomas A. Edison. Thomas N. McCarter, president Public Service Electric & Gas Company, reviewed the career and achievements of Mr. Edison. Mrs. Edison and many Edison pioneers were present.

Machine age enriches humanity

"There is no danger that the machine will master the man," James S. Thomas, of the Commonwealth & Southern Corporation, assured those attending the final convention session on Friday morning. "Our gravest danger now is that we shall begin to substitute fatalistic, pessimistic, mass thinking for the rich exuberance of individualistic thinking and achievement." Dr. Thomas saw the engineering age infinitely enriching the way of humanity if progress be rightly applied and guided.

A colorful exposition of the new wonders and accomplishments of the new age tools of electricity was offered at this session by C. M. Ripley of the General Electric Company.

J. H. Lobban, chairman of the Accounting National Section, reported on improvements in various customer and corporation record systems which largely through standardization offer greater general usefulness. It is our job as accountants, said Mr. Lobban, to see that our accounting is done right, that it is absolutely and irrefutably sound in principle and meticulously accurate in its practices.

C. E. Stephens, J. S. Tritle and Arthur Brown

At this session the memorials committee reported, awards of various prizes were made and the new president, George B. Cortelyou of the Consolidated Gas Company, was elected.

President Owens Stresses Three Tasks

Electrification of homes only begun.
Unsound merchandising policies must be discarded.
Give employees sense of security.

I NEED not emphasize the importance of the domestic load as a revenue producer, nor the necessity of perseverance in active promotional effort, if we are to continue to make available to the homes of the land increased use of electric service, with resultant decrease in rates. In spite of conditions, the record for the year just ending is inspiring, as the following data will show:

	—Twelve Months Ended with February—		Per Cent
	1932	1931	Change
Domestic kilowatt-hours used	11,842,000,000	11,153,000,000	6.1
Average price, domestic service, per kw.-hr.	5.78 cents	5.99 cents	3.5
Total domestic consumers	20,276,000	20,330,000	0.3
Total investment in plant and equipment	$13,000,000,000	$12,400,000,000	4.8

Let no one say in the face of this formidable array of facts that the industry has failed under stress.

But our job of bringing electricity to the home is only begun. This is made clear by the fact that of the principal electrical appliances, even the most popular is used in less than 50 per cent of the homes. The following data gathered from a reliable source will serve to indicate something of the task ahead:

Percentages of wired homes equipped with principal appliances: Vacuum cleaners, 45.4 per cent; washing machines, 40.8 per cent; toasters, 40.3 per cent; percolators, 28.8 per cent; refrigerators, 17.1 per cent; clocks, 16.4 per cent; heaters, 16.3 per cent; ranges only, 5.31 per cent.

Although these figures indicate that a small percentage of the homes own the various appliances, they do not mean that there is no desire on the part of the domestic customer for them. An interesting survey has been made by Prof. Daniel Starch, who asked 1,057 families scattered throughout the country this question: "What do you want to buy next?" The results deserve the serious consideration of every sales and advertising manager. Twenty-eight per cent of the families stated that their first choice was an electric refrigerator, 14.8 per cent chose a rug, 12.1 per cent desired a radio, 10.1 per cent expressed their choice as a washing machine, while 9.8 per cent preferred a vacuum cleaner. These were the largest percentages, and it is worth noting that out of the five largest preferences four were electric appliances.

Although there are indications that attempts may be made at coming sessions of legislatures to enact laws preventing utilities from merchandising, there is no question that the public has the right to expect from central stations leadership in bringing to the attention of their customers the part that electricity may play in their daily lives.

It is the duty of the central station to inform its customers of the means that they may employ in utilizing to the fullest extent the advantages which electricity offers. This merely means the merchandising of electric appliances. It does not mean, however, that the central station should attempt to monopolize the field; neither does it mean that it is not equally the duty of central stations to co-operate with retail agencies, in order that the public may have the benefit of their assistance in doing the job.

It is not in the public interest to drive the central station from the electrical merchandising field. It is not in the interest of the retailer or contractor that legislation be enacted preventing utility merchandising. If every central-station executive shaped his merchandising policies with due consideration for the rights of the regular retailers, there would be no demand for merchandising legislation. Wherever this demand exists, it may be traced, in a majority of cases, to the failure of some utility operator, not always the electric utility, who has disregarded sound merchandising principles and in his zeal invoked practices that will not square with sound business principles.

Legislation should be the last resort of reasonable men to cure difficulties or to effect changes that might better

be done by conference and co-operative effort. That co-operation works has been proved in many, many cases during the past year; that legislation benefits neither the utility, the merchant nor the public is, in my judgment, in the process of being conclusively demonstrated. This question of merchandising is a major executive problem and demands the earnest individual attention of the one in the utility company who is responsible for its policy.

I hope there may be no cessation during the coming year in the vigorous attempts being made by the electric light and power companies to substitute co-operation for misunderstanding on the part of a very influential sector of American business.

Notwithstanding the fact that there is now invested in our industry some thirteen billions of dollars, our greatest asset is and always shall be the men and women whom we have chosen to work with us and to interpret to our customers our service and our policies. Their selection and training still do and always shall constitute our most important tasks. Their close contact with the public every hour of the day, actually rubbing elbows with those whom we serve, makes it necessary that their knowledge of our business be thorough and complete.

But we are far from through. There is another task ahead for us, far-reaching and important. It goes deeper into the consideration of the human element in our organizations. I am a firm believer in the capitalistic system. True, this system in its operation is not perfect; nothing of human origin is, for so long as human beings are prone to err, as individuals, they will carry this propensity into any activity.

True, our capitalistic system is under attack at present by those who would substitute many untried and unsound theories. It is not endangered, however, by those who attack it and are its enemies so much as by us who are its friends. This terrible period through which we are passing will not have been without value if we learn from it that men, and not things, are really worth while. After all, nothing is of value in the world unless it contributes to the comfort, the happiness, the convenience and the advancement of the human race. The system or business that does not recognize this and does not use as the yardstick by which the value of its policies may be determined the test as to whether a policy or an act will contribute to the advancement of society is certain, ultimately, to fail.

We may have learned from the trials through which we have passed during the last three years that no business, as well as no individual, can live unto itself; that there is an interdependence between businesses that cannot be overlooked, if all are to prosper, just as there is an interrelation and an inter-responsibility between individuals, one to another.

Business must, primarily, recognize that when an individual is asked to dedicate his life to it, that business owes him something beyond a mere wage; it owes him a sense of security and the freedom from anxiety that may be caused by uncertainty of employment or incapacitation. This sense of security is not only good for the individual, but it is also good for the business.

We have learned from our recent trials that a business cannot prosper unless individuals prosper. People cannot purchase if they are not employed. It is the problem of American business to solve the question of unemployment. If it does not do so, government will attempt the solution with all the waste that accompanies any governmental undertaking—a waste and a loss which business must ultimately pay.

We have been given in the past to emphasize the material side of life to the exclusion of the spiritual. As I interpret the lessons of history, the people of a nation that lives for and with material things only will inevitably disintegrate into the nothingness that is the fate of all matter. What is true of nations and peoples must be true of business. More particularly does it seem to me that we, in the electric light and power business, dependent as we are perhaps more than any other on the character of our employees, should give careful thought to devising some means whereby recurrences of the terrible release from employment of thousands of people, and their consequent decrease in purchasing power, may be obviated. A study such as I have suggested is at least as much worthy of our thought as is a study into the material aspects of our business. I do not wish to be understood as suggesting any definite plan. Particularly would I not advocate any plan in which the employee himself did not have a definite part. He has an equal responsibility with business in providing his own security and he should certainly make a contribution to it. Whatever the plan that may be finally worked out, the problem itself challenges the best thought of the industry.

Rate Simplification Needed

By PAUL M. DOWNING
Vice-President N.E.L.A.

TO THE average user of electric light and power a proper and intelligent understanding of rates and rate schedules is an intensely mystifying problem. Technical terms bandied about so freely by those of us connected with the industry are to him meaningless. He has but little, if any, conception of what is meant by such expressions as connected load, load factor, power factor, etc. He admits that he hasn't the slightest idea of the difference between a kilowatt and a kilowatt-hour, except that the latter is something he has to pay for, yet they are all things with which he is directly concerned because they affect his pocketbook. Realizing this, he not infrequently wrestles with the rate schedule, only to surrender eventually to the technical hammerlocks and the mathematical half-nelsons which most rate schedules seem to clamp upon the inquisitive consumer.

The majority of schedules are too much for his understanding, and, being merely human, he follows the rest of humanity by distrusting that which he cannot understand. Because he does not fully understand how the bill is arrived at he not infrequently has a suspicion that, no matter how small it is, it may be wrong. If he harbors such a suspicion, it is safe to say that he will almost invariably feel that any error would be in favor of the power company. He may eventually succeed in mastering the fundamentals of the rate structures in effect in one community, but if he moves to another he is almost certain to find them set up on an entirely different basis, with the result that his mystification is greater than ever.

Getting the consumer's point of view

To promote favorable public relations it is essential that we view our business from the standpoint of the consumer. If we concede that rates and rate structures are too complicated for ready public understanding, it would seem obvious that rate simplification is an outstanding need. If it were possible to abandon all existing rate schedules and build new ones from a fresh start, undoubtedly many improvements could be made. But power companies, public regulatory commissions and even consumers are so hedged about with the history and tradition of rate making that, like the judges of our courts of law, they are fettered by the bonds of precedent. As a result virtually every attempt to improve and simplify rates has been along the lines of modifying existing rates, and very often the result has been to complicate them still further.

What constitutes a simple, understandable rate is a question on which there exist wide differences of opinion. Domestic consumers generally would regard as an ideal rate one as easily understood as a grocer's bargain-day advertisement, which names a definite price for a definite article. Industrial and commercial consumers would like a rate they could individually understand without having to call in a technical adviser to explain it. Salesmen for the power companies would like any non-technical schedules that would enable them to tell a prospective customer that his monthly bill would never exceed a fixed and reasonable amount.

Let us consider the rates from the point of view of some of our various consumers.

Housewives know prices but not rates

It will be generally conceded that in the domestic field lies one of our largest potential markets, because it includes the majority of our customers. In this classification the women—the housewives—are the real purchasers and users of electrical energy.

The average housewife is thrifty and economical. She knows the market prices of butter, vegetables, meat and other comestibles because their prices are plainly marked and no jungle of polysyllabic technicalities clouds her understanding. But the housewife who can take her electric bill and tell anything about it, except how much she has to pay, is a *rara avis* indeed. Even a superwoman who can read the meter and has some understanding of the different blocks and the price changes called for in the schedule finds herself confused by rules, regulations, restrictions, exceptions and interpretations dealt with in pages of the company's rate book, but too long and too complicated to be sent with the bill. No amount of explanation will entirely convince her that the bill is correct, but she finally pays, largely because of her passive but dissatisfied acceptance of something she does not understand.

How many of our domestic consumers know what is meant by "kilowatt demand created"? Very few of them have the faintest idea of what it means. The housewife knows what an hour is, but she is told that a kilowatt-hour is not an hour at all but is something

entirely different. She knows something about the minimum or demand charge, the cost of the first 30 kw.-hr. and the reduced cost of each additional kilowatt-hour. But this is based, she must understand, upon the connected load, the floor area, the number of rooms served and the type and registered capacity of her appliances. Or perhaps she is expected to digest the statement that the cost will run to 5 cents per kilowatt-hour per room per month.

Giving full credit to the rate makers and their ingenuity in devising schedules to cover every class of business, one still might ask what the number of rooms has to do with the kilowatt-hour cost of our product or what floor area has to do with it. It seems highly probable that the use of technical phraseology and involved restrictions and regulations, which the prospective consumer cannot begin to fathom and which we cannot always explain even to our own satisfaction, is a handicap in obtaining new business. If it is possible to do so, would it not be better business for us to talk in plain, everyday language that can be readily understood by both our consumers and ourselves and thus remove a considerable amount of sales resistance.

Why not buy milk by the cubic centimeter?

I have said that the housewife knows the price of nearly every commodity used in the home. Milk, for instance, is delivered to her door at 10 cents a quart. If she wants an extra quart, she notifies the deliveryman and another 10 cents is added to her bill. But suppose when she signed up for milk service the solicitor placed before her some such schedule as this:

RATES FOR MILK

(This schedule applies to raw milk. For pasteurized milk, see Schedule 14, pages 12-13, et seq.)
Customer charge, 50 cents.
Milk charge:
First 1,000 cubic centimeters, 1 mill per cc.
Next 5,000 cubic centimeters, ¾ mill per cc.
Next 10,000 cubic centimeters, ½ mill per cc.
All in excess, ¼ mill per cc.

These charges shall be based upon a constant delivery of not more than 30,000 cubic centimeters of milk per month per customer per route, with customer charge applying to not more than three rooms, and an additional customer charge of 10 cents per room for each additional room, not including hallways, alcoves, closets, pantries, bathrooms, attics, etc.

A special discount of 10 per cent is open to all customers taking deliveries in the off-peak period from 12 midnight to 2:30 a.m., but such discount shall not apply unless bill is paid prior to the tenth of each month.

Of course that sounds ridiculous. But it would be just as readily understandable to the housewife as the average rate schedule which she is supposed to accept unquestioningly from the electric company. If such a rate schedule for milk were submitted to her, she would probably order the milkman off the premises and telephone to the grocer for a dozen cans of "Carnation" cream. Unfortunately, she cannot telephone her grocer for a dozen cans of kilowatts!

Our housewife begins to learn of rates

The housewife we are considering lives, let us say, in a certain city on the Atlantic seaboard. She has had experience with her power company and has perhaps learned to accept her service without getting into arguments. She has discovered there are different classes of service, charged for at different prices. She has a range and a water heater, both on the same meter; but the regulations state she must have these appliances so connected that they cannot be used simultaneously. If she wants to use them simultaneously, there must be another wire, or maybe another meter, and assuredly there will be a different rate.

The rate schedule handed her by the accommodating salesman shows that where the entire demand does not exceed 7.5 kw. the first 25 kw.-hr. will cost 7 cents per kilowatt-hour, and that the second block of 200 kw.-hr. will cost only half as much, and so on. She finds, however, that these prices are subject to revision upward with increases in the price of fuel.

Let us move this housewife from the Atlantic seaboard to the Mississippi Valley. On applying for service she is told that she must unlearn what little she has previously learned about rates. Here she finds that in addition to the regular energy charge there is a demand charge for the first five rooms, plus an additional charge for each additional room, plus another charge for all usage in excess of a given consumption where motors totaling over a given capacity are connected. She might eventually come to understand this new schedule were it not for the fact that the company reserves the right to require the consumer to install a time-limiting device to disconnect the water heater from 5 p.m. to 7 p.m. during months specified by the company and to entirely discontinue such service between November 1 and March 1, or when there is inadequate transformer or feeder capacity to handle the load.

She gives up trying to understand this one, and the inferiority complex she develops toward the power company may manifest itself in dangerous dislike. But eventually she moves on to the Pacific Coast, where, she has been told, largely by power-company advertising, that electricity is exceptionally cheap. The affable salesman tells her that his company has taken all of the mystery out of rates. Here she finds another explanation of those kilowatt-hour charges she had become familiar with in the East. Residence service includes lighting and/or lighting, cooking, heating, water heating or other appliances, including single-phase motors not over 3 hp. total load; but this particular company seems to make use of a "block meter with a divided first block." The schedule attempts to explain the method of determining the energy blocks as follows: "First block consists of 35 kw.-hr. for dwellings having five or less lighting circuits, plus 5 kw.-hr. per lighting circuit in excess of five. Circuits used solely for appliances not considered in determining number of lighting circuits. Six hundred and sixty watts per lighting circuit."

We could continue to move this particular housewife from one section of the country to another, and with virtually every move she would find herself facing a new system of rates. For that matter she would not have to move out of her own state to find radical differences. All she has to do is to move to a neighboring community, served by a different company.

Business men should know rates, but don't

One can hear the rate experts at this moment either deriding the suggestion that such simple rate schedules should tax any woman's intelligence or asserting that the complexities of rates are necessarily such that no woman should be expected to understand them. But they will point out that in the commercial and industrial classifications the situation is different. This opinion is also open to some question.

If rate schedules are as simple and understandable as the experts would have us believe, why do commercial

and industrial firms find it necessary to employ rate engineers to explain them and advise as to whether or not they are being properly applied?

Here is an excerpt from a report recently made by a prominent Pacific Coast electrical engineer to a group of building owners by whom he was employed to expert their rates:

A first glance at the rate schedules of American power companies might lead a business man to believe that the conditions of electric service throughout the United States must be as different as there are cities in the nation. As a matter of fact, the conditions of electric service are remarkably uniform throughout the United States and the astounding variety of rate forms represents nothing more than the personal peculiarities of the rate engineers who compile them.

It is unfortunate that so many varieties of rate schedules exist, as they give the impression to the business man of an intricate muddle, especially if he conducts business in several cities and finds that in each the rate schedules are different in form for the identical service.

Consumers believe rates deliberately complicated

This engineer, who was retained to apply rates and not to criticise them, has discussed frankly with power company men the mental attitude of his clients and has called attention to the following as some of their chief points of criticism:

1. Most consumers think rate schedules are too complicated, and many of them hold the belief that they are deliberately made so to render their interpretation difficult by any one other than representatives of the power companies. Whether warranted or not, this unfavorable reaction will always be encountered when rates become burdened with contingent rules and restrictions.

2. Many consumers have a very definite objection to two-part rates in which the demand or service charge stands out as an individual item of cost and the energy charge is added. Less objection is made to a load-factor form of rate, which accomplishes the same object by including the demand factor in the rate block. They realize that low load factor must bear the penalty of higher costs, but they object to a form of schedule that seeks direct payment for the mere readiness to serve energy.

3. Some consumers believe that "class" rates are unfair and discriminatory. Occasionally a consumer will go so far as to ask: "Why do they make me pay one rate for current used for my lights and another for current used in my motors, while all the current comes over the same wires? If this distinction is justifiable, why wouldn't the water company be entitled to charge me one rate for water for drinking purposes and another rate for water used in taking a bath?"

4. Although most consumers understand and agree with the necessity of minimum charges in the rate schedules, many are suspicious of demand and demand indicators.

Free-lance rate experts are kept busy

Throughout the country today engineers are offering rate advisory service to commercial and industrial power users and to municipalities, accepting as their sole compensation a percentage of such savings as they may be able to effect during an agreed-upon period of time. Despite the lack of popularity of these men within our industry, they are doing a perfectly legitimate work. If in the application of optional rates we have failed to give the greatest possible advantage to the consumer, or if, after service is established, conditions should change to the extent that some other rate would be more advantageous to him, he is paying us more than he should and more than we are entitled to charge. If we do not provide him with advisory rate service, so that he may take advantage of options that will save him money, he would be a poor business man indeed if he did not get that service elsewhere, especially if it can be had at no actual out-of-pocket cost.

The rate advisory engineer, if he be a legitimate and ethical practitioner seeking to be helpful to the power company as well as to the consumer, is deserving of power company support and encouragement. Unfortunately, however, many of them are unscrupulous and attempt to get business by feeding the fires of consumer distrust and inferentially impugning the power company's honesty. If one of these unethical individuals is able to make a saving for a consumer, he frequently makes that consumer our everlasting enemy by implying that we have knowingly taken advantage of his ignorance and cheated him out of good money.

This latter type of rate adviser is a thorn in the industry's side. If he is to disappear from the picture, we shall have to pursue one of two courses: Either we must maintain a rate advisory service to make certain that the consumer is enjoying the lowest possible rate to which he is entitled or we must do away with optional rates. This latter course would be difficult indeed, because optional rates have grown and grown to the point where they are available for virtually every class of service from the lighting of a skyscraper to the operation of mechanical jackrabbits at the dog races.

Rate schedules on mass production

Would it not be well, from the standpoint of both company and consumers, to simplify our numerous and varied types of schedules? Our electrical and mechanical engineers have done a splendid job in adopting standards of construction and operation that have met with almost universal acceptance by the industry. Our accountants have done equally well in accounting practices. But what have our rate engineers accomplished in the way of agreeing even on the fundamentals of rate making? The answer to this question may be had by referring to any of the yearly rate books that have from time to time been issued by the National Electric Light Association. The 1931 issue contains 688 pages of fine-print reading matter and sets forth the rate schedules of all member companies in the United States. No two schedules are alike, and every company seemingly has a number and variety of rates limited only by the ingenuity and the imagination of its rate devisers.

What can be done to correct the situation? The writer has no panacea to suggest. No one man could offer a solution that would be acceptable to every one. To think that rates and rate schedules can be simplified by one sweeping gesture would, of course, be absurd. Our rate engineers are not different from experts in other lines of business. They have to be guided by experience. They may endeavor to follow the blazed trail, but too frequently they wander away from the familiar route seeking to discover hidden vales and coulees of their own where springs of new revenue may bubble.

If the faults I have pointed out are to be corrected, it must be done through the co-operation and united efforts of the best brains of our industry, and I am confident that the men who are capable of evolving the elaborate and complicated rate structures now in effect are just as capable of devising simple, easily understood standards which will not only satisfy our millions of consumers but will go a long way toward building up public confidence in the integrity of our industry.

The "White Hope" of Our Industry

By SAMUEL M. KINTNER
Vice-President Westinghouse Electric & Manufacturing Co.

WHILE days have been dark and troublesome for what appears to have been a very long time, it is not the first such experience we have passed through and on to times far more glorious than those of the past. It is, then, with an undying faith in this country's future that I bring you a word of caution against a practice that I fear may be too likely to prevail unless its true meaning is recognized. In a word, I would caution against the all-too-prevalent opinion that the world is finished—that further improvements will be minor in character and, therefore, no great risk is incurred in holding back and waiting for some one else to make them.

There is too much expression of the thought, which is doubtless prompted by fear, that we have gone too far in our use of machinery and may attribute our economic illness to that cause. One might be inclined to give such warnings more serious consideration were it not for the fact that practically every economic disturbance during several centuries past has produced similar warnings.

The development of the sciences and their applications in engineering are not complete. While perhaps there are few who, if asked that direct question, would admit that they believed such developments were complete, there are too many in responsible charge of large industries who will proceed as though they did. They lack the courage of their expressed convictions, and so, in trying to proceed cautiously, will err in not keeping up with the times.

The question that is now faced by the management of many businesses is that of determining the sufficiency of their facilities to cope not only with the present market conditions but with those that are to come. In the making of a decision, that manager who does so in the belief that he can forget further development for the time being is on exceedingly dangerous ground.

Unless one has studied the rates of development and, consequently, the rates of obsolescence it it seldom realized how relentless is the march of progress. A plant that may be "modern" to the last degree today may be quite out of date in a comparatively short time. While the style of the product may not change greatly, the practice of the art does. It, therefore, behooves all managements to keep themselves keenly alive to the necessity of meeting changes. Of all competition there is none quite so serious or ruthless as that which replaces.

It seems odd that so many industries in the past have been blind to the possibilities of the young competing industry just coming into existence but already producing results by novel means.

Almost invariably the industry most directly concerned has attempted to ignore the newcomer; then, as it grew stronger, has resorted to efforts to kill it off, only, in the end, to make peace on the best terms possible.

It seems strange that the old horse-car operators, with few exceptions, played little or no part in developing the electric railways. Equally true is it that the old gas companies treated the new electric lighting industry in a very shabby manner. The telegraph companies didn't see any merit in the telephone business, nor did the latter see any in the radio. The railroads have not devoted the attention they should to the automobile, truck, bus and airplane competition. This seems to be characteristic of human nature—first, to attempt to discredit, then to attempt to destroy and, lastly, to come to a realization that this competition is with us and must be reckoned with in the final order of things.

The question naturally presents itself, and I might as well ask it here, Is the central-station industry keenly alive to the effect of Diesel engine power development? If so, is it following it for purposes of utilizing such advantages as it may be found to possess, or solely to learn of its shortcomings so as to bolster up its own faith and hope in existing methods.

Research aided three stages of development

The central-station industry has had three distinct periods of development thus far and no doubt will have more. These periods can reasonably be termed isolated operation, group operation and interconnected operation and have been due to very definite limits in the equipment.

First Period.—The first period was one where the electric power was generated at or near the center of load and was employed principally for lighting purposes.

The distribution was generally made at the generated voltage. Such a system could not hope to extend very far either geographically or in kilowatt-hours produced. The fetters that bound it had to be removed.

Research was the agency that was employed to free this young industry from its then limited application and provide it with equipment that would greatly increase its scope and enable it to enter the second period.

The principal changes in practice that marked the passing from the first period to the second were: (1) The use of alternating current with its great flexibility of voltage adjustment, which greatly increased the range, and (2) the use of the steam turbine, in place of the reciprocating engine, with its greatly increased size and economy, which changed the order of magnitude of the power developed.

This period was the one when generating equipment development was of prime importance.

Had we accepted the equipment of the first period as the final, it is very doubtful that the central station industry would have ever reached proportions that would have caused any politician to charge it with being a power trust.

Second Period.—With these new instrumentalities provided as a result of research, the expansion of the industry in the second period was quite rapid. Power for traction and industrial uses added greatly to the station loads, which previously had been mostly lighting. The generating apparatus was no longer the limit to the power handled by a large system, but now the control of such power was the next limit reached.

The early type of air circuit breakers had given way to oil circuit breakers and these latter had been constructed in larger and yet larger sizes. The very large currents handled had produced excessive mechanical forces, and attempts to provide adequate strength to withstand them, together with the great installation requirements, had resulted in very large structures—quite expensive. This limit caused the central-station operators so to plan their systems as to limit, in so far as possible, the currents that any circuit breaker might be called upon to interrupt.

However, this limit in circuit-interrupting means was very serious and called for some intensive research to uncover new principles, in order that this obstacle could be removed. The practice had followed the rule of making parts larger, distances greater to resist the increasing forces. Just a plain case of "brute force" methods, but these proved to have a very definite limit because no longer could the additional advantages be secured by increasing proportions.

The seriousness of this limitation was brought quite definitely to the attention of the central-station operators during the war, when attempts were made to pool the electric power generating systems of a particular district, in order that adequate power could be made available for the production of war supplies. It was soon found that, thus tied together, the then existing circuit breakers were incapable of opening circuit faults that it was quite possible to develop.

A number of makeshift arrangements were devised and used with varying degrees of success, but it was quite definitely realized that the control of the large blocks of available power was the real problem and the limit that made further interconnection of systems quite impracticable.

This same condition was present in the line protection apparatus, and even to a still greater degree, because with the increased coverage the opportunities for faults were increased as well as the difficulty of clearing the circuit when they occurred. Other limitations were present and all required research to effect a cure and thus permit the passing on to the much desired greater interconnection of not only the systems of a community but those of more remote districts as well.

To make the next step of the more general interconnection possible it was necessary to (1) have greatly improved means of circuit interruption, (2) more stability in the system as a whole, and (3) greater freedom from lightning interruptions of the service.

Third Period.—Again research proved its resourcefulness in meeting such exacting requirements and so the industry passed into its present period—that involving interconnection of vast systems with hundreds of thousands of kilowatts and in which many hundreds of miles separate the various stations.

Research is never satisfied with simply cut-and-try methods in efforts to solve problems. It requires more exact knowledge of the underlying principles. Thus, if an improvement was to be made in circuit interruption, more must be known of the phenomena that exist when a current continues as an arc though efforts are being exerted to stop it by separating the contacts more and more until the arc, by sheer exhaustion, gives up. The theories generally accepted as satisfactory to explain this kind of arc, upon quite critical examination by research specialists, were found deficient and more complete examinations of arc phenomena resulted in a new theory which pointed the way to new ways of controlling the arc. This new way took advantage of the fact that the arc has moments when it is quite weak. This weakness occurs at the time it is passing through zero. Advantage is taken of this condition to so completely weaken the arc that it cannot re-establish itself on the reverse cycle. Thus the arc dies out quite naturally and leaves no stored energy in the line to surge back and forth seeking its balance.

This accomplishes several very useful results. It increases the speed of operation of the breaker, thus causing less disturbance on the line; reduces the maintenance expense of the breaker, by making less work on contacts necessary, and increases the life of the oil in that type. Breakers are now available for handling the heaviest currents they are called upon to open in the largest interconnected systems.

This additional knowledge of arc phenomena that resulted from the researches suggested several ways of accomplishing the effects desired. This, of course, resulted in various designs—quite different in appearance and some quite superior to others. Each of these designs has its advocates and time will determine which is really the superior, provided, of course, that all of them, in the meantime, are not superseded by another type outstandingly better than all of the present ones.

The point, however, is that research pointed out a different way of accomplishing a result and then several ways were found for utilizing it.

Critical researches were made to determine the laws of stability of systems, and these are now known to a

high degree of exactness. It is now possible, by application of this knowledge, to forecast the stability of a system under all of the many kinds of conditions that may tend to disturb it.

Means are now at hand for improving the stability of systems even under quite severe conditions, which, without such means and knowledge of how to use them, would be quite useless for all practical purposes.

Researches on lightning disclosed the fact that direct strokes of lightning to the line were not as uncommon as previously thought. Furthermore, the attenuation of the energy along the line was at a much higher rate than previously believed.

This information, secured over several years of study in the laboratories and in the field on actual lines in regular service, has now made it possible to construct lines which can be so protected as to make them practically lightning-proof. Whether such lines are built and used depends solely upon the economics of the individual case.

While special emphasis has been placed on the three features of circuit-breaker adequacy, system stability and lightning protection, it should not be inferred that real progress was not made in a number of other elements of the system. There has been real progress made both on individual parts, such as turbines, turbo-generators, transformers, automatic appliances for control uses and other parts, and also in their co-ordination in a system.

These large undertakings, such as we encounter in the present period of central-station operations, call for a co-operative effort of the highest order. No longer can the manufacturer of a part, or parts, of such a system be supposed to develop the whole system, as was the practice in the first period, to a lesser degree in the second period and to an even less extent in the present, or third, period.

The manufacturers of turbo-generators and transformers cannot be expected to advance the central-station industry in the development of its complete system, any more than can the manufacturers of copper ribbons, electrical steel and insulating materials be expected to develop the turbos or transformers for the electrical manufacturers. Each has his own field—what is a finished product for the one is the raw material for the next. Each group then is expected to do its share and each must be so manned that it can do its part effectively.

The electrical manufacturers are now working co-operatively with the suppliers of their raw products in an effort to improve them. They are also working co-operatively with their customers in efforts to make their products better satisfy the uses to which such products are put. The effective workers in such undertakings are engineers with special training for such undertakings. If these developments are to continue, and I am sure they will, then each of these several groups must do its share and so provide engineers and funds for that purpose.

The central-station industry is now in the third period—but what about the fourth? It is not too early for us to give due consideration to it.

As previously mentioned, there is a Diesel engine development to be reckoned with. Possibly we may pass through an isolated operation with Diesels similar to the one termed "first period" with reciprocating engines. This, in turn, may give way to some form of gas turbine, etc. That alone would not require such an elaborate study if the electrical parts of the system could be transplanted from the present. Unfortunately, or fortunately, depending upon how such developments are viewed, this cannot be done, because a whole new art in vacuum devices is to be reckoned with. No longer is it necessary to have rotating machinery to effect conversion from alternating to direct current, or *vice versa*. Currents can be varied over wide ranges, even to actual extinction, without any moving parts. The number of phases and their frequencies can be changed at will. Here in these devices, as they are developed to larger sizes, we can look for our apparatus that will displace much of the present.

The fact that some of these vacuum devices have been known for several years, and yet these things have not yet come to pass, though previously predicted, means nothing. Radio was known and used commercially, in a very limited way comparatively, for 25 years before broadcasting caused it to blossom out as a real industry. Airplanes are similarly destined to do much more than anything yet accomplished by them in a utility way. So, do not discount the part that electronic devices are yet to play in the central-station industry.

Instrumentalities that have already exhibited an almost limitless number of possibilities in the laboratories and that have made possible, as yet in a small way, all kinds of operations of conversions in voltages, phases, frequencies, rectification, circuit interruption, oscillation generations over wide ranges, and relay actions of a variety of kinds, are not to be considered too lightly as the beginning of a new period on central-station operation. A fourth period, in which electronic devices will characterize the operations, is probably the next major step in the development of the central station.

With such wonderful possibilities ahead, it behooves all of us to keep up an intensive program of research and development, in order that a full realization of these possibilities may be had. If the industry is to maintain its rate of development of the past few years it will be necessary to carry on this work aggressively. This can best be done in three groups of workers—(1) the research studies of the manufacturers; (2) the co-operative activity of the manufacturers' engineers and those of the central-station industry, and (3) the developments that must be made by the industry engineers alone. All three groups are necessary; the failure of any one greatly retards the other two.

Let me repeat the thought I expressed at the beginning: The central-station industry's development is not complete and thorough, co-operative effort on the part of the operators and the manufacturers is necessary to secure a large part of all of the advantages that are to be had. We must not then stop this progress by withholding the necessary men and money.

Engineering a Function in Business Readjustment

By JOHN C. PARKER
President Brooklyn Edison Company, Brooklyn, N. Y.

IT HAS been suggested that engineering pioneering is all done; that our engineering developments in the future will be, if not mere repetitive application of standardized processes, at the most minute refinement of things which in the large sense are all worked out. Nothing could be further from the fact than this.

Nobody conversant with the art would say that there are any signs that the marked progress of the last ten years has now come to an end. On the contrary, those who best know what has been accomplished recently know also the vast possibilities of improvement.

Development of our distribution systems scarcely has been touched, and sound engineering of those details probably will involve drastic reorganization of our whole line of thought. It is surprising that in a relatively young industry like ours the detail of the distribution art has pretty nearly become traditional, with all of the sacred sanctions that surround a tradition. I do not claim that the distribution art is static, but I think you will agree with me that it has not shown the degree of progress in detail that we have found in our generating station. Standards of construction and the devices used in distribution look remarkably like what was in use 30 or 40 years ago. I am talking primarily of our distribution secondaries, house services and meter installations.

The reason for this static tendency is easily appreciated if we look at the process of concentrated interest that surrounds the selection of a turbo-alternator and contrast that with the casual manner in which feet of duct, yards of cable and dozens of meters are bought and installed, week after week, month after month, with nothing to dramatize the function of selection. Yet in many of our companies the distribution system represents a capital investment of three to five times that of the generating station. Meter purchases alone may aggregate more than turbo-generators. Here is opportunity for initiative and for radical analysis.

Station practice due for change

The possibilities in connection with new media for transferring heat energy from boilers through turbines are extraordinary. The modern steam turbine has done so well in realizing the theoretical maximum of performance within the temperature limitations which at the present seem practicable that we are likely to be content. It needs but little imagination, however, to visualize the advantages that can be had through doing more work in the upper ranges of the heat cycle and through extending these ranges. Generating plants are susceptible of simplification and of organization of design more orderly than anything that we have done so far.

Let us for a moment be frank and admit that there are, if not fashions, at least customs in engineering design and that some of these may be definitely irrational. Somebody has worked out a nice little trick for insuring the operation of an auxiliary. Somebody else piles other refinements and duplications on top of that until we develop a generating station in which each auxiliary is supplemented by a second or a third. Boilers are installed with the idea that any boiler may go out of service at any time and still leave enough steam for the driven unit, while at the same time the main unit does not have a reserve pair of slip rings or an auxiliary governor, and so, to take care of this, we put in a spare turbo-generator. Some day an engineer is going to design one of these conventional stations and then, from the drawings, he is going to collect all the assorted spare units and duplicate auxiliaries and put them in one place and find that he has an additional complete simplified generating unit and money in the bank. The convention has been to put up boiler houses and turbine rooms and then to throw walls around and a roof over them. Engineers of a radical turn of mind today are looking at the possibility of putting the whole thing out of doors.

Engineering technique needed in accounting functions

Engineering is necessary to our industry in a much broader way than we usually believe. With some notable exceptions, the industry as a whole has been willing to operate the results of design and construction in a much more haphazard way than that in which these designs and constructions have been brought into being.

One of the most immediate opportunities—and indeed, I feel, a genuine necessity—lies in the more general introduction into the functions of operation both in generating stations and in our distribution systems of the

processes of engineering analysis. I suggest this in full consciousness of the splendid work that already is being done in many places and in full realization of the fact that the safe operation of a property is not a matter of mere chemistry, physics and mathematics. Indeed, the excellent analytic control processes which have appeared in some of our outstanding companies have gone hand in hand with a splendid record of operating continuity and do point the way for the rest of us in the matter of better load allocation, more intelligent combustion control, saner use of auxiliary equipment and thoughtful overhaul processes as a preventive of operating contingencies.

There is room for the extension of the engineering habit of mind and engineering technique into the non-operative departments of our companies, whether the engineering habit is developed by engineers or by others. Recognizing the limitations of the engineer with references to the processes of accountancy, one does, none the less, recognize as well that the accountant is, in the last analysis, dependent on sympathetic and intelligent engineering judgment as to allocations to fixed and operating costs, that he must depend on engineering interpretations as to where generation, transmission, distribution, conversion and utilization terminate. I conceive budgeting both of construction and of operation as a necessary fundamental to orderly management—budgeting, not as a Procrustean bed, but as a means of intelligent and flexible control and as a means of forecast. I do not believe that the engineer can do the whole job on this sort of thing, but I am sure that nobody but the engineer adequately can forecast the needs of construction in such a way that the dollar spent today will be useful as part of the plant that shall be tomorrow, and surely if he has any excuse to call himself an engineer at all, he can forecast operating costs in such a way that monthly statements will not be an occasion for self-congratulation or alibi after the fact.

Costs and rates await engineering method

With much hesitancy, I suggest that in the matter of cost analyses for rate-making purposes the engineers can render invaluable service. They of all people should have a background for determining the way in which customer operations affect fixed and production costs. I don't mean to suggest any particular theory of rate making, but I do say that to the extent that costs enter and influence rate analysis

I have little faith in statistical interpretations except as controlled by a clear understanding of functional relationships, and I am sure that a broadly intelligent engineer can define these functional relationships for the benefit of the other groups who must come into the process of rate making.

To the extent that our rates shall follow a value-of-the-service theory there is ample room for engineering analysis. Not merely is it necessary to know, in a laboratory sense, the possibilities of this, that or the other type of isolated plant, but it is essential to know the actualities involved. Here indeed is room for an expansion of the engineer's functions. This value-of-service is not an objective thing. It is definitely in the mind of the customer. If the customer believes that he can produce energy for himself more cheaply than the facts warrant, that is the competition against which we must sell, and if our sales people believe that the customer can produce service more cheaply than we can render it, that is the competition against which they are selling.

A good many dollars spent in competent engineering appraisal of the competition are cheap indeed in comparison with rate adjustments based on inadequate opinion, and business gained at fair rates as a result of engineering knowledge of the competitive facts is profitable to customer and company alike.

I seem also to find an essential requirement for more engineering in connection with our commercial functions. Beautiful engineering work has gone into the development of utilization appliances, and equally some utilization appliances are terribly sad expressions of a desire to manufacture and sell away beyond the capacity to realize the intention. If engineering gives a man ability to foresee performance in advance of experience and seriously to interpret experience as a guide to development, the mere selection of utilization equipment can benefit by the same engineering skill that is found by our companies to be necessary in the selection of generating and distributing devices.

These few things will do perhaps in way of illustration of the reasons back of my conviction that engineering has not only a continuing importance in our industry but a very increasing significance. Beyond all that, there are certain moral and spiritual qualities of the engineer which today are invaluable in our business life. I think most serious people will agree that the return of what measure of prosperity lies before the country will be gradual and progressive rather than meteoric. To this the straightforward intellectual integrity which characterizes our profession, dogged persistence and the ability for hard work, are essential.

No need for alarm about banker control

I am not suggesting that American industry or our industry is going to pass into engineering control. I am suggesting that the engineering qualities must play a vitally important part in the process of recovery,

Some of our people look with alarm at what has been styled banker control. If banker control means circumscription of all the operations of our companies by the processes of finance, regardless of commercial promotion and regardless of design, construction and operation, there might be some occasion for such alarm; but if banker control means that all of the functions of our companies, including finance, must be correlated for service and stability—and this I judge to be a fundamental of sound financial operation—then there is much about which we may be sanguine.

We have seen industries wrecked by an excess of narrowly interpreted engineering control. As an industry we have freely and properly condemned political control. Irresponsible high-pressure sales department control has not proved too happy, and lawyer control may give us delightful litigation minus vitality. Personally, I have never known a time when any of these types of control has been exclusive. I have heard every group

within most of our companies complain, on occasion, that there was control by this, that or the other group; but, strangely enough, no two influences in any company would be likely to be in agreement as to what is the dominant philosophy. It is in the very nature of things, of course, that executive policy will be governed by the background or the prejudices of the stronger individuals. In any case, we may well ask ourselves what we are going to do about it.

If a given company is under sales control and another one is under banking control, or still another is under engineering control, that type of control is a fact just as much as the physical operating plant. If our industry as a whole comes at a certain stage in its history preponderantly under the influence of men of a given philosophy, all the complaining in the world is not going to change an accomplished fact. On the contrary, a querulous criticism or a sense of discouragement will serve only to emphasize the situation through creating a conviction that the complainants are not competent to adjust themselves to the facts as they exist.

What will most benefit our industry is a legitimate and co-operative extension of each of these functions of management where it will accomplish the most good in a particular situation.

If our engineers broadly enough visualize the service which they can render and modestly recognize that engineering is a vital and valuable part, but only a part, of a whole that is bigger than itself, then I for one shall have faith that the engineering functions and engineering values will find wider acceptance by those responsible for the other functions in our companies.

We stand today on the threshold of a sturdier and solider development than our industry has known for nearly a score of years. The doorway is wide enough for all branches of our industry. We as engineers need not concern ourselves much as to who will represent leadership within the household. Our one concern should be to enter as self-respecting members of the family, willing to take what place we may merit, but vastly concerned whether our merits shall be up to the traditions of the house.

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Welcomes Constructive Criticism

By B. C. COBB

Chairman Commonwealth & Southern Corporation

WE ARE in the limelight today and we must not forget it. This is always so when things get big. People take an interest or evince curiosity when something is or becomes large. Sometimes bigness and the interest it arouses call forth unjust criticism. Sometimes bigness needs criticism, because bigness of itself does not always do right. This we should remember. We cannot always be perfect; no business was ever conducted that did not make mistakes. This is not an excuse for the errors that some of us may have committed. It is purely an opinion that we should not avoid or ignore criticism. Rather should we welcome it, if it is properly made. It may be helpful and to our advantage.

We have made rapid strides in the development of our industry, and because of the rapidity of our growth we undoubtedly have left undone some things which should have been done. Because of our growth we have perhaps incited the desire on the part of some to pull down. There are a goodly number of exponents proclaiming their belief in the idea that the government should not only regulate but control and operate all of the utilities. Such people would not stop at governmental operation of the public utilities; they would also have the government operate practically all kinds of business. I am not here going to discuss the benefits or the detriments of such a system. That is a social and an economic question of itself.

Suffice it to say, in my opinion, our government has enough troubles of its own at the present time in looking after its proper governmental functions without entering additional fields of endeavor which, for it, would only multiply its difficulties.

We are passing through strenuous times—times that try men's souls. In such times we must not get panicky. We must keep our feet on the ground and our heads clear. When things are going bad people begin to worry. That is only natural. Because one worries, however, it does not necessarily follow that one should not think. Then it is that one should think the most. Then it is that one should fight the hardest to correct those things that are wrong.

Like it or not, and whether it be fair or unfair, the truth is that we have been for some years under attack.

This attack has been largely made by those politically minded, and many times it has been unfair. It has not, however, been confined by any means to those who are politically minded. Others have entered the field—I won't say field of attack, but rather the field of criticism and suggestion. This attack and criticism we cannot lightly push aside. Much of it is unwarranted and unnecessary and I may add of evil intent. Some of it, however, is sincere and comes from sources that are fair in mind. To it we must give heed, not by recrimination, by bluster, or by abuse. That will not get us very far, even though it may stir our blood and give us momentary pleasure. We will make much greater headway by employing explanation, by the giving out of proper information, by cleaning our own house if it needs a cleaning, and by conceding when we are wrong. We are not as bad as some of our critics paint us, but we are not entirely blameless. A few people in the industry—and I dislike to say it—unfortunately have made mistakes, and in some instances things have been done that were not merely mistakes but were acts that were highly improper and manifestly wrong.

Let no one think that this comment is a confession or a plea penitently made for leniency before the bar of public opinion. Rather would I have it construed as a simple statement of my belief that

this industry—that this association—is big enough, is strong enough and brave enough, properly to guide its members and effectively discipline them if necessary so that we and the people generally may not suffer from what may be termed supergovernmental control and the ills that follow in its train.

An old saying is that a man's bigness is evidenced by his willingness to change his mind. Perhaps I may add that it is no sign of weakness to make correction when one is wrong.

Regulation, and properly, we have had for many years. It is going to continue. No one should object to that. It is important, however—and this is repetition—if any additional regulatory laws are enacted, that they be reasonable and not unduly burdensome. This I say not only for our own sake but for the sake of those whom we serve and because of those whose money is intrusted to our care. I urge with all the strength at my command that the regulation of public utilities not engaged in interstate commerce be left with the state authorities, who can better supervise their operation than can a bureaucratic system, already much too large, set up in Washington.

Inasmuch as ours is a regulated industry, we cannot expect more than a reasonable reward for the service we render. We should not get less and I do not believe any person of right mind will gainsay that statement. It behooves us in the electrical industry to see to it that we do not get caught between the upper and the nether millstones. We cannot continue to decrease the rates of charge for service rendered and at the same time pay taxes on a constantly ascending scale per unit of service sold. The gap between will some time, if this procedure keeps up, reach the vanishing point. No business can long carry on without a profit, except and unless it be maintained by inroads upon the public treasury.

We should be tolerant in all things—I mean tolerant of those who criticise and suggest—for it may well be that their criticism and suggestions may give us new food for thought. Because one suggests or because one criticises does not necessarily mean or imply that such a one is always wrong or attempting to do harm. Oftentimes those whom we most dislike and of whom we are most afraid may be rendering us a favor which we cannot at the moment see.

To be tolerant is one thing. To be intolerant is another, and intolerance is of just as great importance to us in our business as tolerance. We should be intolerant of that which derides or attempts to pull down those things which we know are right. We should be intolerant in defending the laws, the principles and the precepts upon which our industry is founded. We should be intolerant of those who, for no good reason whatsoever, seek to tear us apart. We should be intolerant in our desire to serve and in our desire to reap a reasonable rate of reward for the service we render. We should hew our course along right lines, sticking to our guns with full faith and knowledge that we are conducting a good business and conducting it in the right sort of way.

Ours is a great industry. Surely it cannot be destroyed by those mischievously inclined. To keep it together, however, so that it may render service and so that it may be inviting to our customers and others for the investment of their money, we must conduct it so that it may be clean in thought and purpose and so that whatever we do in its operation may be kept above reproach.

Finally, and this applies not only to us in the electrical business but to all others, our maxim and our motto should be, "Have faith in America; have faith in our industries; have faith in each other." We should render to those whom we serve the best we have in us. I know that if we do we will be very helpful in making life well worth the living.

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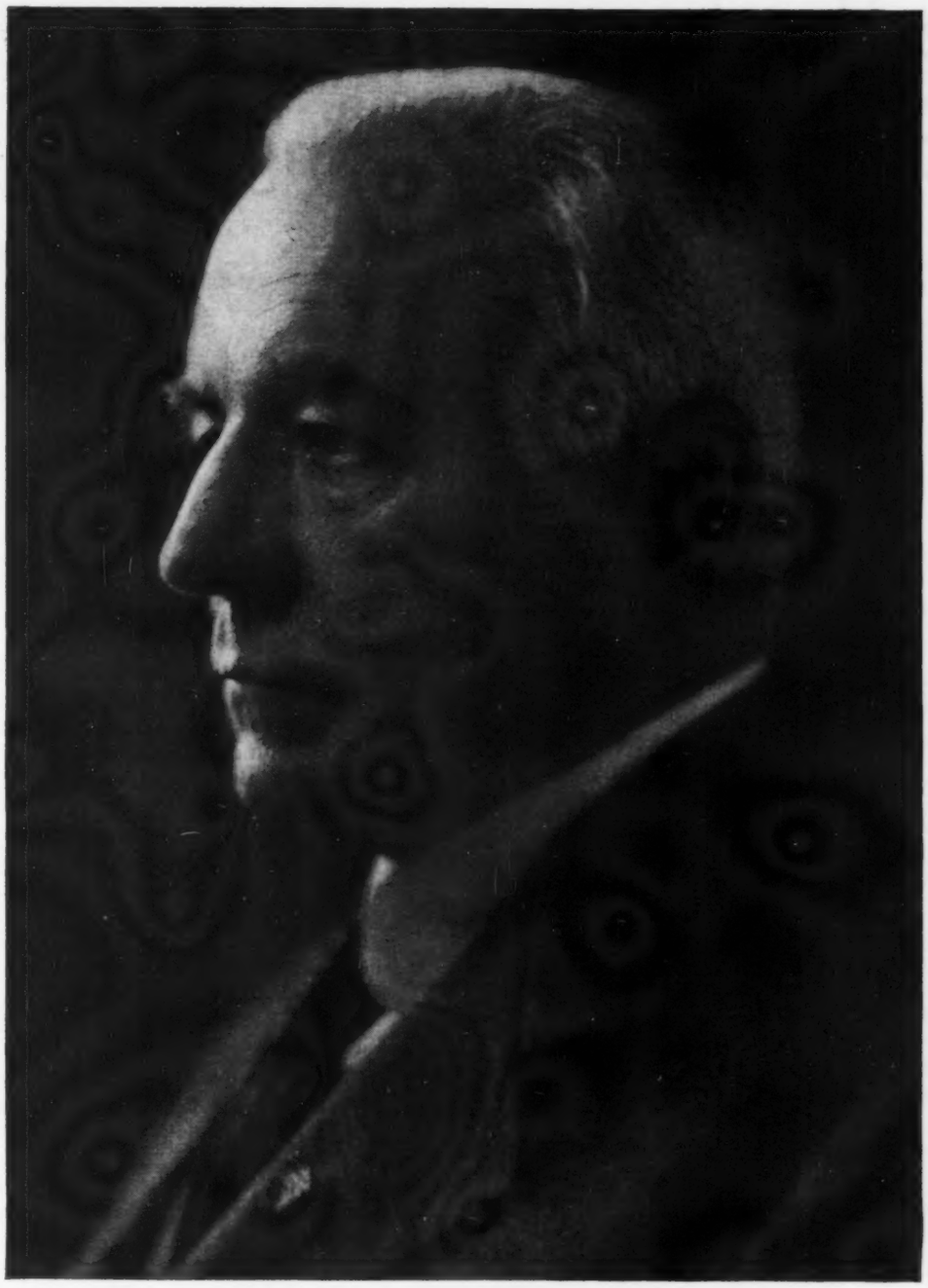
An Investment That Deserves Protection

The investment in the electric power and light industry, including manufacturers, central stations and central station customers, as of this date, borders on 30 billions of dollars. This all means, taking our population as 120 million, that there is invested in the electrical industry in some way or other an amount approximating $250 for every man, woman and child in the country. It is an industry that should have just consideration, for it is of great import to all the people.—B. C. COBB.



George B. Cortelyou

President Consolidated Gas Company, New York

The Next President of N. E. L. A.

The Road to Better Understanding

By D. C. GREEN

Chairman Public Relations Section, N.E.L.A.

THE average utility employee knows his own job. But, save for the exceptional employee, the average man or woman in the utility's employ has known little or nothing of the fundamental economics of the utility business. Questions with regard to rate schedules, to franchises, to interconnection or to any of the matters relating to broad questions of finance or general policy have been entirely outside the orbit of the average employee's experience.

When the employee has read in his paper violent criticism of utility policies he has had no easy means of satisfying himself whether these criticisms were deserved. When his friends have jokingly rallied him about his connection with the wicked "power trust," or have seriously quoted to him some hostile speech or comment, he has had no adequate means of protecting himself or his company.

Now a bewildered employee, or an apologetic employee, or an employee who has felt compelled to justify his job to himself and to his friends, cannot possibly throw his whole heart and soul into his job. Just so far as he fails to understand the real problems of the company that employs him, just so far will he fail in giving 100 per cent service to that part of the public with which he deals.

Realizing this, the Public Relations Section, during the past year, has devoted the major part of its attention to the employee. Each company has approached the problem in its own way. But the underlying thought has been the same in every instance. There has been no attempt to crowd ready-made facts into the ears of an unwilling or uninterested audience. At the outset it was understood that any information the employee desired would be made available, but that he must work out his own ideas and his own conclusions from the facts.

Through the medium of employee meetings, employees have been encouraged to discuss, among themselves, the basic reasons behind the procedure and practices of the utility business. They have been enabled to gather in small groups where they are free to voice any opinion or ask any question and to direct their attention to the basic problems of the industry in which they are engaged.

From the reports that have reached the Public Relations Section from the companies where these employee meetings have been going on, the result of broadening the information and the viewpoint of the individual employee has brought dividends to the employee, to the company and to the public. The company has benefited through better teamwork among the members of different departments. Each employee has been given an understanding of the importance of his own work and its place in the proper functioning of the company business. He has been given a new conception of his particular job, as part of a united effort to serve the public. The public has benefited not only through the greater efficiency that this has induced, but also through the clearer view of the fundamental usefulness and value of utility service which consumers have secured from utility employees who themselves understood the broader aspects of the utility picture.

In those companies which have most actively extended the employee information program there has been the greatest change in the general viewpoint of the employee. In place of an apologetic attitude toward his work, there has developed what one might well describe as a militant spirit, a consciousness that however routine or inconspicuous the job may be, represents a real contribution toward better homes and more efficient factories.

I can illustrate what I mean no better than by giving you an incident from the experience of one operating company in the South:

A telephone company executive called at a local garage to get his car. While he was waiting for it to be brought to him, his attention was drawn to an argument which was in full blast among a group of the garage employees.

The subject before the house was the alleged shortcomings of the local electric company. One man who was defending the company was having all the best of the argument. He answered every question that was leveled at him and finally silenced every objector by his evident mastery of the facts.

The telephone executive was so struck by the incident that he asked the owner of the garage the name of the defender of the electric company. The proprietor told him, and added that he was a former employee of the electric company who had lost his job as part of the company's economy program due to decreased business.

When the electric company learned of the incident, it decided that the man was too good an employee to lose and put him back to work. This particular company had been devoting much time and effort to the employee information program. The facts and figures which the company defender had used in his argument in the garage had been picked up in the employee meetings.

This experience simply typifies the results that have already been achieved in various sections of the country, through giving the rank and file of utility workers a real insight into the problems of the companies which employ them. The man who understands what utility service means, and who appreciates the necessity for team play between the worker, the company and the public, is the best asset that an operating company can have in its contacts with its consumers.

Such an employee will not be swayed or shaken by hostile criticism of his company. Because his loyalty is an understanding loyalty, he will take pains to see that no act of his shall lessen public regard for the company he serves. Because he has convinced himself through his own personal investigation that, broadly speaking, his company is working for the welfare of the community and its industries, he will take pride in the labor of his head and hands.

The companies that have already experienced the benefits of the employee information program will undoubtedly make this a permanent part of their future activities. Others that have not proceeded far enough to see the practical results will eventually come to the same conclusion.

Day by day, and month by month, through more than a quarter million of men and women, our electric companies are making contact with the consuming public.

We owe it to the public that, in those millions of contacts, the representatives of the electrical industry shall be truly representative. We need to make sure that the meter reader, the lineman, the cashier, no less than the executive, will go about their tasks with a clear and understanding spirit, proud of what their company is doing and ready to give more than routine attention to their duties.

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For Maximum Distribution of Electrical Appliances

By P. A. O'CONNELL

President National Retail Dry Goods Association

THE industry has now reached the point in its career when the problem is to find the most efficient and soundly permanent means of distributing its products to the public. This is the stage in which the established department and specialty stores must function, for no other agency is so well equipped to secure breadth and economy of distribution as they are. The problem is to establish sound and workable policies for the distribution of these products which will promote co-operation between the utilities and the retail merchants.

Apparently the difficulties encountered so far have been due in part to local misunderstandings and in part to short-sighted, unsound merchandising practice on the part of all three groups—the appliance manufacturers, the utilities stores and the retail stores. Good merchandising does not overcome its obstacles by price slashing or by offering extravagant premiums. The expense of selling must be kept down, but the price must be sufficient to allow a reasonable profit for the distributor and for the manufacturer. The consumer must be able to secure the merchandise conveniently and at the lowest price that will permit a reasonable profit on its manufacture and distribution. The moment any one attempts to cut below that price he not only disrupts his own business but he also destroys the confidence of the consumer in the product.

The public utilities are interested in the increased use of appliances using electric current; the retail merchants are interested in supplying as many as possible of such appliances to the consuming public; the appliance manufacturers are interested in establishing permanent and reliable channels of distribution for their products that will reach the largest number of consumers at the lowest selling cost and that will leave a reasonable margin of profit for both manufacturer and retailer.

Given these factors, it is apparent that the difficulties between utilities and the retail merchants can be adjusted, for it is to the advantage of both that they shall be. In fact, substantial progress in this direction already has been made. I believe, however, that the real solution of the whole merchandising problem lies in the hands of the appliance manufacturers themselves and depends upon the selection of quality stores as their primary retail outlets. Heretofore, in the sales manager's wild rush for business he has sold wherever he could get an order. He has failed to take into consideration the standing and reputation of the store in which he desired to place his

Potential Market for Electrical Goods

	Per Cent of Wired Homes			Per Cent of Wired Homes	
Appliance	Owning	Not Owning	Appliance	Owning	Not Owning
Clocks	16.4	83.6	Percolators	28.8	71.2
Cookers	6.1	93.9	Irons	96.7	3.3
Dishwashers	.6	99.4	Ranges	5.3	94.7
Egg cookers	1.4	98.6	Refrigerators	17.1	82.9
Floor machines	1.5	98.5	Sewing machines	16.4	83.6
Heaters	16.3	84.7	Toasters	40.3	59.7
Heating pads	10.9	89.1	Vacuum cleaners	45.4	54.6
Hot plates	10.9	89.1	Waffle irons	13.4	86.6
Ironers	3.5	96.5	Washing machines	40.8	59.2

products or the effect that the store would have on their prestige. He has been thinking in terms of the immediate sale rather than the future of his business. The truth is that a manufacturer should select his retail distributors as carefully as he picks plant personnel.

There is a vast difference between stores. It hinges primarily upon the wisdom, integrity and policy of the management and the quality of merchandise carried. It is not essentially a matter of price, for good quality need not be high-priced. Nor is it entirely a matter of size, for today some of the best-managed stores are by no means the largest in the city. The prime difference between retail stores is in the quality of merchandise and service with which they supply their customers. The store that is known for reliable quality is usually one that can be counted upon not to stoop to shortsighted or unethical trade practices. These are the stores that the manufacturers of good-quality electrical appliances should seek as their distributors. Moreover, such stores will be glad to handle their lines as soon as they see that the manufacturers mean to adhere to such a policy.

To carry out such a selected dealer program of selling takes time and is not always immediately successful, but in the long run it is sure to prove the most profitable for the manufacturer, for the retailer and for the consumer.

Price wars do not stimulate consumer demand, they demoralize it by destroying confidence in the store and in the product. Selling consistently at a loss helps no one but the bankruptcy lawyers.

Prices must be kept as low as they can be and still allow a reasonable profit. The surest way for manufacturers to get their goods to the consuming public at a reasonable cost is by selling only through retail stores that are known to the public for merchandise that is thoroughly reliable and trustworthy. The fly-by-night distributor and the so-called cut-price store invariably cost the consumer most in the long run, because of their constant tendency to reduce quality. It is such establishments, also, that are giving rise to a menace which right now is eating into the very foundations of American industry—the sweatshop.

The next question is, which types of quality retail stores will give the best representation for electrical appliances? For some kinds of appliances doubtless the better chain systems are a logical choice. For the larger units and, in fact, for most of the better quality appliances the most promising in the long run are the department and dry goods stores, together, of course, with some of the other specialty stores. Inasmuch as the independent stores and the local multi-unit establishments sell more than 80 per cent of all the retail merchandise, it is clear that they are in the best position to reach the broad consumer market which the electrical appliance industry requires.

The department stores are geared for volume and for quick transactions. Original promotion work is not their function, but once the demand for a product has been established they furnish the largest and the most efficient means of distribution that can be secured.

The advertising of electrical appliances that has been done by department stores of late is not all that could be wished. It has centered almost entirely on price, primarily of a "special sale" nature. That appeal quickly burns itself out and leaves the public unwilling to trust bona-fide offerings of reliable merchants at fair prices which may follow. Even under the present abnormal conditions there is more benefit to all concerned by advertising quality. Even if price is spectacularly low, stress the quality of the merchandise and what it will do for the consumer.

It would help the consumer very much and also the retail merchant if every new electrical appliance could be tested by an authorized laboratory to make sure that it is of good quality, that it will do what it is supposed to do, and that it is safe. This should be done before the product is put on the market and the product should be primarily marked as having been approved by such a laboratory. To the retail merchant, however, and probably also to the utility companies the establishment of a central laboratory, under the direction of the National Electric Light Association, which would use the standards set up by the association would be a tremendous advantage. Through such a laboratory the association could practically rule out products that are unsatisfactory and could directly help to encourage the production and distribution of quality appliances.

Possibly this is not the best time to start selling electrical appliances in sets rather than piecemeal, but it is surprising how much buying power is found today when one offers the public something it needs. I would not be at all surprised if a well-selected set of essential household appliances would sell today in good volume. Certainly it should be worth trying. It is the way other household equipment is bought and, if generally adopted, it would immediately increase volume, would lower sales costs and would benefit the customer.

In the final analysis it always is true that the plan of merchandising which best serves the consumer is the one that eventually will prove most profitable. Today the great need is for good quality. In large part the present difficulties of business are not due to lack of buying power but to lack of confidence. Prices have shrunk below the confidence level. Reliability and stability are what are needed. Hence, in seeking distribution, place your products in the hands of carefully selected dealers who are known to handle good quality and who are giving the public a square deal. If you have dealers who lack this standing and who resort to cheap, shortsighted tactics to obtain sales, change your connections.

The most dangerous loss in this period of reconstruction is the loss of our good will. These times are trying men and managements in a way that they never have been tried before. Many are stooping to practices and methods that they would not have considered under normal conditions. Hold tight to your standards. Stick to good quality—quality of merchandise, quality of business principles and quality of retail representation.

When the smoke of this battle clears away the real victors will be those business houses that have maintained their integrity, their reputations for honest goods and honest dealing. Most of us can afford to use a little red ink for one year, but none of us can afford to sacrifice our good will which represents years of struggle in building but which can be lost in a single year by one false step. The one safe course to which we can hold is the course of quality.

Industry Faces New Problems in Next Expansion

By A. H. KEHOE*

Vice-President in Charge of Engineering, New York Edison Company

PREVAILING among executives is the view that our engineering problems are of major importance to the continued progress of our business. Consideration of our enormous capital and the large proportion of gross income which must be devoted annually both to technical operating expenses and to fixed charges on plant investment makes one appreciate the importance to management of the engineering and operating problems within the industry.

A review of our former achievements indicates that reductions in cost of service and improvements in its quality have in the past been brought about either because of the cumulative effect of detail improvements in the multitudinous operations throughout the country or because of the introduction of new processes or principles which have greatly simplified our operations. Both of these methods remain as possibilities for future expansion. The rapid adoption by all member companies of such improvements when made depends upon prompt co-ordinated action which is made possible by our engineering committee.

In times of economic instability the tendency to compromise the future to improve present conditions is to be expected. A danger, however, arises from the possibility that some will find virtue in continuing restrictions beyond the point of necessity and by their acts cause our future progress to be greatly curtailed.

To almost every one who has given thought to the subject it is evident that our industry is rapidly changing front. Changing conditions are bringing about fundamental engineering problems which are as important as any which have been encountered up to date. In certain respects they are radically different from those to which we are accustomed.

In the past we have pioneered new territory with the realization that fairly high density of utilization would result. Competition was for satisfactory illumination with some miscellaneous power and heating applications in the commercial and residential field, and it was for improved drive in the industrial power field. In each of these cases it was clear that we could deliver a cheaper and better service than any non-electrical substitute which could be offered. Today pioneering is necessarily limited to sparsely settled rural communities where low load densities are the most that can be expected even with large individual use on each of the farms. While expansion of service into rural districts is still far from its end, nevertheless the growth of our industry will be slow indeed if it is restricted to only such additions. Our expectation for continued expansion rests principally on the probability of making major additions of load within the area already served by our lines. Competition for additional business, however, is radically different from that initially experienced in the pioneer stage, as the advantages of making increased use of the service are much less clear than was service for the initial demands. In fact, unless the quality and price of the service is right and means of utilizing it exist, it will be extremely difficult to obtain in volume the amount of additional business many of us hope and expect to supply in the future.

There exists, of course, at present a large amount of additional business which is ready to come to our lines if we go out and sell. This, however, is business which is at present competitive but has not yet been sold. There has been and there should be in the future a lag between technical developments and full sales to the public.

The danger which I wish to indicate is that of starving technical developments to the point of removing all the slack between sales to the public and engineering accomplishments either in the form of cost and quality of service or in the form of additional means of utilization. This danger in a sense is double in that when our ability to compete ceases we are likely to find competition which itself is further strengthened with proper technical backing.

Our efforts for new business for the present and immediate future will be against well-intrenched methods

*Chairman Engineering National Section, N.E.L.A.

or habits. Changing to electrical means will not in many instances show the same unquestioned savings, and the extending of utilization to render new results not hitherto obtained by the customer will be highly competitive with other pressing items in his budget of expense. New or improved use means that low cost and high quality of service must be available if the potential market for increased use of our service is realized. If the objective is to be accomplished, there are technical research and engineering development problems to be solved which are as great as any mastered in the past history of the industry.

Productive group must be retained for new era

However, we are by no means facing an impossible task if the industry can be kept geared up to its present pace, for from many angles the probabilities of large expansion are very promising. The public is expecting electrical utilization developments and in prosperous times will adopt them in quantity if they are made available in a form which will assure good service at a low price. It is possible, of course, to accomplish both of these requirements by pursuing gradually field experiences, but the measure of success and the rapidity of its attainment will depend upon the amount and type of engineering which is devoted to the job. If the same amount of technical skill is utilized in the future as has been used in the past, one ought not to be far wrong if he predicts that continued rapid progress will be certain. To accomplish this our designing and construction engineers should be diverted where this is necessary to other activities within our own organizations, for if such engineers are dropped and thereby scattered into many other jobs, it will be found that a productive group cannot be quickly assembled when the forward march of progress in our business again starts, and there will be considerable inertia acting as an impediment to ever again assembling such a productive group of engineers.

This period is one in which active engineering work should be applied on the large number of operating and maintenance problems which still exist where there is a possibility of obtaining immediate returns far in excess of the cost of the engineering required to be devoted to such projects. Realignment of the activities of design and construction engineers will pay the expense of maintaining the present technical and operating staff and allow them also to continue progress in the engineering developments which will be necessary if we as an industry are to continue our expansion.

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Mechanization Creates Employment

By Dr. JAMES S. THOMAS
Commonwealth & Southern Corporation

Mechanization has been unjustly criticised for causing many sociological troubles, chief of which is unemployment. If these impeachments were true, the electrical industry would feel the brunt of public reaction as much as any. But the author has gathered some facts that disprove most of the criticisms. Those which are presented here should cause augmented appreciation of the benefits which every one in the electrical industry has always ascribed to the machine age.

HARSH impeachments are being brought against the machine, and it is being thrust into outer darkness by honest, tender-hearted people who feel deeply. There are some features about the machine age none too pleasant to contemplate. But it does have defenses, and they are soundly rational and historically accurate. In the first place, it is a common fallacy that we have the only "industrial civilization" which has ever existed. On the contrary, all civilizations have been industrial. There is no other way for them to exist. They have differed only in degree and intensity, and the variations in them have been determined almost entirely by the wants of men at a given time. The quality and life of the culture produced has invariably depended upon the success of the commercial and industrial period and its duration. The greater the wealth produced in the period, the greater the contemporary culture. Culture always follows business. Business has been the forerunner of every great civilization which the world has known.

But, more specifically, the intelligentsia tell us that there is nothing human in the machine. It is crushing the life out of men they say, reducing them to mere robots, keeping them "handcuffed to the machine," making mere automatons of them. The facts are that the machine is the most humane thing yet contrived by man and has far outstripped his philosophy or his altruism in freeing man from arduous toil and slavery.

To face a fact, it must be said that human slavery has persisted longest in those civilizations where the agrarian life was the predominant economic technique. The curve of tenant farming invariably diminishes as the curve representing the use of machines on the farm increases. Time was not so long ago when sixteen hours was a legal day's work. The machine has made this inhumane. Where hand labor, with its "ennobling influences," persists the majorities are dangerously close to slavery yet.

London two hundred years ago was largely one of those "ideal handcraft" cities of the "good old days" variety. Then the industrial artists had "pride in their work" and disease in their systems, for the death rate under those "ideal working conditions" was fifty to each one thousand of the population as against twelve and a half today under the machine.

The machine has brought life, not death, as the critics of the machine would have us believe.

Oscar Wilde says: "The fact is that civilization requires slaves. . . . Human slavery is wrong, insecure and demoralizing. On mechanical slavery, on the slavery

of the machine, the future of the world depends." Here is a poet with a sociological background. Here is real intelligence!

Are we a nation of mere "machine tenders?" In 1910 we had 41,615,000 people employed in the United States. Of these 7,972,000 were workers in factories, while 827,000 more worked at other enterprises connected with factories, giving a total of about 9,000,000 men and women engaged in working with and about machines. Of these nearly 9,000,000 the highest estimate of actual machine tenders is 4,500,000. Our population in 1910 was 105,711,000.

The "machine tenders," therefore, amounted to only about 4½ per cent of the population, or 13 per cent of the total number of employed persons in the United States.

It took 70 per cent of the population as human slaves to produce the Golden Age of Athenian culture, whereas only about 4½ per cent of our population work at the machine, and I maintain that it is neither so strenuous nor so enslaving as ordinary labor in the open fields or in the blacksmith shop. It is much better to be a worker in a modern factory than to labor in the quarries of marble-built Athens.

As a matter of fact, machine tenders are decreasing. In 1928 there were 1,250,000 fewer men in factories than in 1923, and 1928 was one of our busiest recent years. This does not mean that fewer men were at work, although popular opinion has put this construction upon it. It only means that fewer men were at work in factories and fewer men were tending machines, for during the same period we added more than 2,000,000 men and women to our payrolls who were working at new trades and new enterprises which the higher development of the machine had made possible.

"The factory system is undermining health." It is interesting to observe that, with modern machines, ventilated factories and a regard for the health of the "machine-bound" man, the healthiest occupation in all England and America is the manufacture of glue and manure!

The linotype machine was invented in 1887. At that time typesetters were working twelve to fourteen hours a day. By 1903 there were 7,500 of these machines in use. The hours for setting type had been reduced from fourteen to eight. The wages increased 20 per cent. The death rate decreased 30 per cent. A very unhealthy thing, this linotype machine!

Accidents are closely related to health. Today, in the "machine-made" world, there are fewer accidents to the man who works than ever before in the history of civilization. The records prove this in spite of the fact that in an earlier day only major accidents were reported. One thread factory in this country went 10,000,000 man-hours without a lost-time accident. Many plants go for months and even years with not so much as one lost-time accident.

The Metropolitan Life Insurance Company has just announced among its industrial policy holders the lowest death rate in all history.

"The machine throws men out of work." Philosophically, the best answer to this criticism is that this is exactly the glory of the machine—it does the work of men and thus releases them for more interesting pursuits. But that the machine "throws men out of work" is another one of those "perfectly self-evident propositions" which do not happen to be true.

Turning to England for a moment, because the figures have been carefully recorded there by the government for more than a hundred years, and taking its largest industry, textiles, we find that it took 320 persons to spin as much in 1769 as one man could spin in 1840. But in 1855, just fifteen years later, one man could spin as much as 700 men could spin in 1769. Arkwright invented the first spinning machine in 1855. That is the year we have one man spinning as much as 700 men could spin just 86 years before. According to the argument of the man in the street, this is throwing 699 men out of work in the lifetime of one octogenarian.

But have a look at the facts in the case (Table I).

Table I—Men Employed in Textile Industry in England

Year	Employees	Year	Employees
1835	218,000	1878	483,000
1847	316,000	1885	504,000
1850	331,000	1890	526,800
1856*	379,000	1895	538,900
1862	451,000	1907	577,000
1870	450,000	1914	689,000
1874	479,600		

*Year after Arkwright invented first spinning machine.

There was a steady growth of employment in an industry in which the improvement of the machine was going forward at a faster rate, perhaps, than the machines of any other industry. But this does not tell all the story. In 1831 the population of England was 24,028,584. By 1911 the population had grown to 45,221,615. This means that while the population was doubling the cotton workers were trebling. This does not look as though the improved machine had been causing unemployment.

In England the fourteen "engineering trades" show the same thing. Let us have a look at Table II to see what has happened to these workers:

Table II—Number of Persons Employed in Engineering Trades

Year	Males	Females	Total	Decennial Increases, Per Cent
1871	222,594	12,900	235,584	....
1881	253,994	13,982	267,976	13.7
1891	323,327	18,904	342,231	27.7
1901	507,782	22,738	530,520	55.0
1911	564,994	37,413	602,407	13.5

Here again we have the same result. The number of persons employed increased all the time while the machines were being improved all the time. A mere glance at the decennial increases shows that the number of people employed in fourteen engineering trades in England increased much faster than the population increased. Taking the four periods in which the percentage of increase could be figured—the last four—we find that the average increase for the four is 27.475 per cent, which, of course, is far beyond the increased population for the same period.

But there are also figures for the trade that has made the most rapid advance in perfecting machines, the printing trade. The advance in technique in this trade has been little short of marvelous. Yet, when the figures for printing and distributing the product are taken into consideration, the same conclusion is reached. It is estimated that the man-hours necessary now to bind a thousand books are only one-third of what they were just

thirty years ago. There are figures on this trade which show that improving the machine puts men and women to work, not out of work. Examine the figures in Table III—taken from the English census again. These figures show a constant increase of employment, even at a more rapid rate than the increases in population.

Table III—Employment Data—Publishers, Booksellers and News Dealers

Year	Males	Females	Total	Decennial Increase, Per Cent	Number of Employees
1871.....	57,484	8,587	66,071	....	14,163
1881.....	74,542	12,941	87,483	32.4	16,865
1891.....	102,082	19,125	121,207	38.5	23,394
1901.....	119,834	29,959	149,793	23.5	31,972
1911.....	140,968	43,107	184,075	23.0	40,847

The truth is that most of our apprehensions about the machine putting large numbers of people out of work are based on the false assumption that demand for goods will become stationary. Quite the reverse is true. There is no good reason for assuming that desire for the good things of life will suddenly cease. Thirty years from now huge fortunes will be made out of patents not yet known in the patent offices of the world.

Now printing, with the engineering trades, is perhaps most subject to the influence of invention. The most cursory examination of the advance in technique in these trades will reveal a real epic of progress. Combining printing and engineering trades in England and calculating the percentages of increase in employment in them over a period of forty years, we get, not unemployment, but a steady increase of employment. This is shown in Table IV.

Table IV—Employment Growth in Trades in England (per Cent)

Year.....	Increase of Population	Increase in Engineering Trades	Increase in Printing
1871.....	13.21	....	....
1881.....	14.36	13.7	32.4
1891.....	11.65	27.7	38.5
1901.....	12.17	55.0	23.5
1911.....	10.89	13.5	23.0

Only once did population increase faster than the number of persons engaged in engineering. This was the period from 1871 to 1881. But these trades more than made up for this decennial in the three decennials that followed. From 1891 to 1901 workers in the engineering trades increased by 55 per cent.

It is revealed by English statistics that the total number employed in industry—and all trades affected by the invention of new and modern machines are included—increased during the thirty years between 1881 and 1911 from 6,373,000 persons to 9,468,000. This is at the astounding rate of 48 per cent for the period. But the population of England for the same period increased only 38 per cent. Were it not for the strident voices of the calamity howlers, the ghost of unemployment as caused by the machine could be forgotten. Of course, the fact is that but for the machine England's population could have increased 38 per cent in the thirty-year period between 1881 and 1911. And for a very good reason—the country could not possibly have supported them. Starvation, or peasant standards of living for all, is the alternative right now between that state and the best machine possible.

The National Industrial Conference Board in making a study of mass production in the United States recently brought to light some interesting facts in comparing the United States with Great Britain. The board said: "Eight selected major manufacturing industries in the United States which use an average of one and a half as much horsepower per wage earner employed as do the same industries in Great Britain turn out, largely as a result of this greater use of power, from two and a half to three times as much production per wage earner employed. This greater productivity per worker accounts largely for the higher wage levels and living standards prevailing in the United States. . . ."

Now, it will be evident that in spite of a greater mechanization of industry in this country than prevailed during the same period in Great Britain, unemployment began in Britain before it did here, attained its worst proportion there sooner than it did here and has retained its greater magnitude in proportion to the number of employed persons. If the machine has been the cause of our present unemployment, we should have far outstripped Great Britain in this lamentable respect, because our mechanization since the World War has been much more rapid. But this is not the case.

For instance, between 1920 and 1928 there was an increase in the number of workers servicing and driving automobiles of 760,000, including 100,000 bus drivers, a vocation which did not exist in 1914. There were 100,000 more insurance agents in 1928 than in 1919. Electric refrigeration, light and power and oil-heating establishments have increased employment by another 100,000. Between 1919 and 1928 another 100,000 were added through construction work and management. There were 232,000 more teachers and professors required to look after the young in 1928 than in 1919. Motion-picture servitors (not production employees) added another 125,000. Barbers and hairdressers increased to the tune of 170,000, personal servants in hotels and restaurants 750,000, and radio employees 200,000.

Thus it appears from the facts that, while we were displacing in America 1,957,000 people through increased efficiency made possible by the machine, we were adding in new trades and professions 2,537,000 people. The difference just accounts for the increase in population during the period. Hence it is that as the machine becomes more and more efficient the new service functions not only offset unemployment but indicate a larger per capita earning power and thus increase the standards of living.

When a Cabinet officer and a United States senator ascribe our present unemployment to the "baneful influence" of the machine, they say nothing about unemployment in fields where few or no machines are used and conveniently overlook the new fields for labor brought in by the machine.

As the machine grows more efficient hours of labor grow less, goods get cheaper and better, and the only limitless things in the world, human wants, expand to demand sufficient additional goods to keep everybody at work, provided we behave as we should.

The truth about the machine is that while it may not be an unmixed blessing its advantages far outweigh its disadvantages.

Taxation

By GEORGE T. BUCKINGHAM*
Vice-President Illinois Power & Light Corporation

250,000 taxing bodies.
Average man works 61 days to support government.
Federal government the biggest concern in private enterprises.
Fifteen major activities increase expenditures 63 per cent in six years.
State and local expenditures more than twice federal.
Political patronage a tax builder.
What must precede government economy?

TODAY'S sovereigns, who hold the power of economic life and death over us, are the Congress at Washington, the legislatures of 48 states, the commissioners in 3,100 counties and the aldermen, trustees, etc., of multiplied thousands of townships, school districts, cities, villages—in all about 250,000 taxing bodies.

During the first century of the republic this hydra-headed sovereign was relatively kind and considerate to the subjects. The legislators, elected by the people, kept fairly well within the Jeffersonian idea, which is to exercise, and pay for, as little government as possible. So during all those early decades the tax bill of the average citizen was a mere incident to his affairs. Indeed, prior to 1913 the whole expense of federal government was met by three indirect forms of taxes—tobacco, liquor and imports.

But in the last three decades, and particularly in the last fifteen years, taxes have become the most important and the most serious single fact in the affairs of every citizen.

In 1913 the aggregate of expenditure by all forms of government was about three billion dollars. In 1931 it had reached *fourteen billion* dollars. In 1890 the average citizen paid out for all forms of government $13.56. In 1931 this had risen to about $117 per annum for every man, woman and child in the United States.

The President of the United States recently publicly announced that total taxes now absorb nearly 20 per cent of the national income, and that in effect the average man works 61 days in each year to support government.

The figures involved in these vast expenditures, and consequent huge taxation, are astronomical, but the causes—the fundamental causes—are few and simple.

Consider, for a moment, the federal government. In 1900 the Department of Agriculture at Washington had 3,400 employees. In 1931 it had more than 28,000. In 1902 the Department of Commerce and Labor was set up with 1,050 employees. In 1930 the two departments which have succeeded to the functions of the original department had acquired a personnel of 29,000.

Nor are these two specific departments sporadic instances. In practically all of the departments of federal government there has been a corresponding expansion in new activities undertaken, and consequently in the personnel necessary to carry on those new activities.

It is a startling fact, as shown by the government reports, that the civil service employees of the government at the end of 1930 numbered more than 600,000. This is about three times the personnel of the army and navy combined.

This makes plain that a large part of the huge and mounting expenditures at Washington are due to the undertaking by government bureaus and departments of a great many new and additional activities which, while they might possibly be classified as governmental activities, were not in former years considered necessary governmental activities.

Many observers, and I am one of them, believe that two-thirds of all those new activities in the government departments could be discontinued tomorrow without any adverse consequences to the inhabitants of the United States.

But this does not account for all of the increased expenditure. Another important fact is that the government, during the last fifteen years, has gone in for all kinds of activities not related to government as government. It has conducted new and numerous excursions into the domain of purely private business. It has spent billions of dollars of taxpayers' money on private business enterprises which have no proper relation whatever to government. (Witness railroad operation, shipping business, stabilization of wheat and cotton prices, Boulder Dam, etc.)

The federal government at this moment is the biggest single concern engaged in private business enterprises in the whole world.

As a consequence of these gigantic expenditures for unnecessary government activities and for private business operations, the federal government faces a deficit* of approximately two and one-half billion dollars—a gap between its expenditure and its possible income greater than ever incurred by any nation in peace time in all history. From the Treasury Department report of federal governmental expenditures for the years 1927 and 1932 there has been tabulated the comparative expenditures of fifteen of its most important money-consuming departments and agencies. Not all expenditures, but the leading fifteen items. This tabulation shows in six years an increase of $1,231,100,000.

Yet these amazing figures do not even give pause to our legislators at Washington. At the present session there have been introduced by various senators and representatives proposals for appropriations of $1,000,000 or more each, aggregating the stupendous total of $32,000,000,000. All of this vast proposed expenditure is for things which the government has not done before—has done without for 143 years, and for which there now is no real need.

This $32,000,000,000 figure does not include regular

**Excerpts from very complete paper on the subject.*

**Now being balanced by increased taxes.*

department recommendations, nor does it include other billions involved in a great number of minor money-spending proposals, involving less than a million dollars each.

Black, however, as is the federal picture, it is white and incandescent when compared to local public expenditures. Of the total tax bills for 1931 federal spendings were, in round figures, only four and one-third billions, while state and local spendings accounted for *nearly ten billions.*

In the local fields are multitudes of minor taxing bodies, each independent of all others, free to spend money, issue bonds and collect taxes within their own little areas, unhampered by any effective control or co-ordination. These overlap in every direction, so that an unfortunate taxpayer finds himself the subject of not one—but a score—of petty sovereigns, each with unlimited power to tax his property.

In my own state of Illinois a survey made in 1928 by the University of Chicago disclosed that there were then in the whole state 15,560 separate corporate taxing units, or one for every 473 persons. In the United States the total corporate bodies which have the power to levy and collect taxes are nearly 250,000.

In 1913 the total indebtedness of all state and local bodies was $3,596,000,000. In 1932 it had risen to $16,000,000,000.

Of the people who state their views as to the proper course to pursue, in this emergency, the business men, without exception, advocate immediate and drastic curtailment of expenses, while the politicians, with some few notable exceptions, advocate the finding of new and additional sources of revenue and the issuance of more bonds —in short, additional taxation.

These two viewpoints illustrate that underlying all the excessive public expenditure there is another basic cause, which is deeper and more potent than all others, and which is inherent in the different point of view of the business man on the one hand, and the politician on the other.

Our sovereigns—most of them—think in terms of "political patronage" and "party organization." Sometimes this is called by the irreverent the "spoils system." Unfortunately, this has grown up in the land until it has become a recognized and respectable practice. It is to the interest of the senator and the representative that as many as possible (not as few as possible) of his constituents get on a government payroll, because these are a part of the political army, to insure his re-election, and to him his re-election is the most important single fact in the universe.

This same concept is a major influence with state legislators, city aldermen and all other elected officers throughout the land, and since the number of these taxing bodies is almost a quarter of a million, involving at least one million persons composing these bodies, the aggregate of superfluous and unneeded employees in every department of government is enormous and staggering.

Only recently you have seen what happened at Washington when an effort was made to cut federal salaries. The jobholders fairly swamped the Capitol. Even on those spacious grounds there was not enough space to park their cars, and the galleries could not hold them. The congressmen did not make the cut. They had raised a Frankenstein monster too formidable to control.

The "spoils system" is absolutely inconsistent with economy and efficiency in government. In the hands of honest legislators—and most of them are honest—it fosters rank extravagance in payroll and other expenditures. Government operation of anything is more expensive and less efficient than private operation. And that fact is directly traceable to the generally accepted "spoils system," which pervades and dominates our political structure.

Under the "spoils system" your congressman, your legislator and your alderman tend to extravagance and to the creation of unnecessary political officers, because, under present conditions, that is the best way to get re-elected.

A by-product of the "spoils system" is that, in spots, absolute dishonesty rears its head. And when it does, a perfect saturnalia of waste is the result.

Expenditures of Just Fifteen United States Government Departments

	1927	1932	Amount of Increase	Per Cent Increase
Total expenditures ..	$3,493,600,000	$4,482,200,000	$988,600,000	28
Less — Interest and sinking fund payments.....	1,120,500,000	1,016,800,000	103,700,000*	9*
Less — Miscellaneous not included in budgets of major departments.....	409,100,000	270,300,000	138,800,000*	34*
Balance which was expended by major departments, commissions, etc., as follows.....	$1,964,000,000	$3,195,100,000	$1,231,100,000	63
Department of Agriculture marketing fund — net (Farm Board).....	.....	$155,000,000	$155,000,000	...
Post office deficit....	$27,300,000	195,000,000	167,700,000	614
Treasury Dept.....	151,600,000	312,900,000	161,300,000	106
War Department....	360,800,000	483,700,000	122,900,000	34
Navy Department...	318,900,000	378,900,000	60,000,000	19
Shipping Board.....	19,000,000	60,800,000	41,800,000	220
Department of Justice	24,800,000	53,800,000	29,000,000	117
Department of Commerce.....	30,900,000	54,700,000	23,800,000	77
Other independent offices and commissions.....	35,400,000	57,600,000	22,200,000	63
Legislative establishment.....	19,700,000	32,400,000	12,700,000	64
Department of Labor	9,900,000	14,100,000	4,200,000	42
Adjusted service certificate fund.....	115,200,000	200,000,000	84,800,000	74
Veterans' Bureau (Veterans' administration since 1930	391,500,000	784,400,000	392,900,000(A)	100
Interior Department.	302,700,000	78,300,000	224,400,000(A)	74*
Total of major departments, commissions, etc.....	$1,964,000,000	$3,195,100,000	$1,231,100,000	63

*Indicates decrease.

(A) Since the Bureau of Pensions was transferred from the Interior Department to the Veterans' Bureau in 1931, in order to make a fair comparison with 1927, it is necessary to combine the expenditures of the Interior Department and the Veterans' Bureau for each period, which results in an increase in expenditures in those two divisions of $168,500,000 for 1932 as compared with 1927.

Please understand that what I am saying is not an attack on either political party, or on any faction, or on any individual politician. None of them invented the "spoils system." It has grown up imperceptibly throughout the years, with the acquiescence—yes, the active support—of you and me and everybody.

The crisis which the American taxpayer now faces has been caused by an orgy of public spending—most of it wasteful, much of it unnecessary and some of it actually criminal, and this public spending has for its major cause the system of "political patronage," of partisan and factional and personal political organization, which has only now come to its full fruition.

Where does this lead?

If the spending of public money continues at its present rate of geometrical progression—or even at its present rate as a stabilized level—this nation is going bankrupt, all of the lesser governmental agencies are going bankrupt and the millions of American people are going bankrupt, in the worst economic débâcle this old world has ever witnessed.

Demagogues, big and little, from Washington to the villages, have preached to the second class, the man in the street—the voter—that taxes are paid by the rich and that the little fellow does not pay. No greater fallacy was ever voiced. If you tax the landlord, he passes it on to his tenant, who pays in the form of rent. If you tax the merchant or the manufacturer, he passes it on to his customers, in the increased price of merchandise. Taxes, like water, seek a level. Wherever they are placed first, they pass along and finally land on the ultimate consumer. Everybody pays the taxes.

But before the taxpayers' revolt can be made effective—before it can be translated into the only language our sovereigns understand, the language of votes—the indirect taxpayer must be educated to the basic truth that he—and not somebody else—is the taxpayer. That education is the monumental task, which, in self-preservation, must be performed by the direct taxpayers—the tax-conscious taxpayers. Fortunately this group, in most places, includes the intelligence, the character and the natural leadership in that community.

To the taxpayer the election of a congressman is even more important than the election of a president, and the election of a state legislator is even more important than the election of a governor.

▼ ▼ ▼

To Increase the Revenue per Dollar Invested

By T. O. KENNEDY
Chairman N.E.L.A. Commercial Section

IN THESE unusual times, when depositors are running the banks and the bankers are running the theaters, it behooves every business to do some self-analyzing to determine, if possible, just where it is headed and who or what is leading it in that direction.

The electric light and power industry, for example; will it remain under the management of its present type of executives or will those responsible for its destiny decide that the pressing political and commercial problems require for their solution a new and different type of management?

We have a magnificent physical plant, built up during the fifty years of our industry's history—facilities so extended as to serve not only every city, town and village but more than 11 per cent of the farms of this country with a continuity and a degree of perfection unequaled anywhere in the world.

The investors whose faith in our industry made possible the creation of this great electrical system look to us, as managers, for the safeguarding of their twelve and one half billion dollar principal and for a reasonable return earned on their investment.

During the past ten years new-business development has failed to keep pace with the growth of the physical system.

1. The average investment per customer has increased 40 per cent.

2. The kilowatt-hour sales per dollar of investment have decreased 30 per cent.

3. The revenue per dollar of investment has decreased 24 per cent.

Excellent improvement has been made in operating efficiency, but this has not been sufficient to prevent a decrease in net return available for the investor's dollar.

It is interesting to note that while taxes have continued to take a constantly increasing percentage of the total revenue, the taxes per dollar of investment have decreased over the ten-year period by 2.4 per cent.

It is apparent then, is it not, that we, as managers of this industry, must apply ourselves aggressively to:

First—Securing more customers at a connection cost at least no greater than our present average,

Second—Selling more kilowatt-hours per customer.

While approximately 70 per cent of all United States homes, including farms, now enjoy the advantages of electric service, there still remain almost eleven million unwired homes—one-half of them in urban and one-half in rural territories.

Under conditions as they now exist, these houses can be wired at small expense and necessary line extensions made to connect them at a cost materially lower than the industry average investment per customer. The financing of these line extensions and the financing of the customer's wiring cost on a basis to make possible the electrification of these unwired homes as rapidly as possible would be of distinct advantage to every branch of the industry.

With improved load factor, our industry's system capacity is sufficient to supply twice as many kilowatt-hours as we are now selling. With proper rates of promotional type, we can open up entirely new markets in the homes of our present customers.

The bar to lower rates are the present straight energy rates which have built up in the mind of the public the belief that electricity is a commodity rather than a service.

Our first step in solving this problem of increased sales is to establish the fact that every domestic customer should pay at least 5 cents per day toward the fixed costs necessarily incurred to make electric service available in his home. This minimum payment to cover a reasonable number of kilowatt-hours to meet the needs of the purely convenience user, and the rate for additional use should reduce rapidly to a low price per unit.

Such a rate form would be of maximum benefit to the customer, the appliance manufacturer and dealer as well as to our industry.

With rates of this type in effect, we can successfully promote complete home electrification, co-operating with all retailers of electrical equipment in putting appliances on our lines as rapidly as possible.

Our greatest contribution in this connection, in addition to promotional selling, would be the financing of sales, by all dealers, of load-building equipment at terms within the customers' ability to purchase. Nor should we hesitate to undertake such *financing*.

Having already invested $500 in permanent facilities to permit us to sell 600 kw.-hr. per year to a customer, we should be glad temporarily to advance a like amount at reasonable interest to make it possible for that customer to purchase appliances that would double, triple or quadruple his use of our service.

Nor must we overlook the opportunities to increase sales to commercial and industrial establishments which are quick to take advantage of the use of electricity as a means of improving their operations. To enlarge this market properly it is only necessary that we keep our rates at all times competitive with other forms of power and co-operate with industry in the development of new applications of electricity in production processes.

Such competitive power rates are naturally dependent upon the adoption of equitable schedules for all classes of service, insuring the collection from each domestic, commercial and power customer of his due proportion of fixed charges on the investment in facilities to serve him.

The imperative need for such rate forms is especially evident now. Our industry is limited by regulation to only a fair return during boom times and rates must be of such a type as to protect our investment during industrial depressions as well as to encourage greater use of service at all times.

When commercial and sales departments are properly established and when they receive enthusiastic executive interest and support they can be most effective not only in load building but also in promoting improved public relations through customer contacts. The importance of effecting a better public understanding of our industry was never greater than it is today. A well-informed public is our industry's best defense against the imposition of new tax burdens and the further encroachment of government ownership in competition with private business.

These two hazards to the future success of our industry go hand in hand, since the greater the tax levied on the privately owned utility the bigger the handicap enjoyed by the municipally, state or nationally owned competitor which is not only tax-exempt but tax-subsidized.

There can be no doubt in any one's mind that our industry is being more and more forced to assume the duties of tax collection, yet nothing is done by those in political power to legislate us into this position to temper the antagonism of our customers from whom we must collect and pass on this constantly increasing tribute.

Fred W. Sargent, before the United States Chamber of Commerce meeting at San Francisco, said:

> We hear much about the old frontiers having passed forever and that there is now no new territory to develop, such as rescued the country from previous panics. The truth is that we are standing on the verge of the greatest frontier of all—the frontier of inadequate comforts, conveniences and luxuries for the great masses of our people, and all this in the midst of plenty. What we need is to re-establish faith and courage and credit. One way to do this is to assure private capital and private industry and individuals everywhere that their investments once made will not be jeopardized by government competition supported out of the public treasury. Subsidies of all kinds, direct or indirect, should be promptly and permanently withdrawn where they have the effect of competing with private industry and thereby interfering with the normal processes and the initiative and enterprise so necessary to renewed prosperity.

In the belief that the American public is inherently fair-minded lies the hope that when once the people are fully informed as to the situation affecting our industry they will not longer countenance the political persecution to which we are being subjected. The job of bringing about this much-desired condition of public understanding is a major responsibility of the management of our industry and one in which the commercial department can be of great assistance.